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ISSN 0007–1595

Bulletin of the
British Ornithologists' Club

Edited by
Dr D. W. SNOW

Volume 111 No. 1 March 1991

FORTHCOMING MEETINGS

Tuesday, 9 April 1991. Professor C. H. Fry will speak on **"Alcedinidae".** Professor Fry is well known for his work in Africa, particularly for his research on Bee-eaters and related birds. He is Professor of Biology, Sultan Qaboos University, Oman, and is an Editor of *The Birds of Africa.*

Those wishing to attend should notify the Hon. Secretary by Tuesday 26 March 1991*.

Tuesday, 21 May 1991. Dr D. H. Thomas will speak on **"Water, water everywhere—the Problems of Seabirds at Sea".** Dr Thomas is a Lecturer at the School of Pure and Applied Biology at the University of Wales. He has worked on the adaptations of Sandgrouse and other birds to desert conditions and on the problems of Shearwaters and Penguins in pelagic conditions.

Those wishing to attend should notify the Hon. Secretary by Tuesday 7 May 1991*.

Tuesday, 9 July 1991. Mr R. E. Scott will speak on birds in Bulgaria.

Tuesday, 22 October 1991. Dr Robert Cheke will speak on birds of Togo.

Tuesday, 26 November 1991. The Chairman, Mr R. E. F. Peal, will speak on birds of N.W. Morocco.

Meetings are held in the Senior Common Room, Sherfield Building, Imperial College, London SW7 at 6.15 pm. for 7 pm. A plan showing Imperial College will be sent to members on request.

*It is usually possible to take acceptances up to the weekend before a meeting, but members are asked to accept by 14 days beforehand as arrangements for the meeting have to be confirmed with Imperial College well in advance.

If you accept and subsequently find you are unable to attend please notify the Hon. Secretary, 1 Uppingham Road, Oakham, Rutland LE15 6JB (tel. 0572 722788) as soon as possible.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 111 No. 1 Published: 27 March 1991

REPORT OF THE COMMITTEE FOR 1990

Meetings. 1990 was an exceptionally full year for the Club. Thirteen meetings were held, of which one was a special occasion, the 800th Meeting of the Club. Seventy-six guests of the Club, members and their guests attended the meeting held at Imperial College to celebrate the 800th meeting of the Club at which the Earl of Cranbrook gave the address.

A Conversazione was held in the Pavilion, University of Canterbury, Christchurch, New Zealand, from 6 p.m. to 10 p.m. on 5 December as part of the 20th International Ornithological Congress. This was the first meeting of the Club ever to have been held outside England and was attended by many of the overseas and British members of the Club and other participants of the Congress. As well as being a welcome opportunity for the exchange of ideas, it enabled overseas members of the Club and other readers of the *Bulletin* to meet the Editor and other officers of the Club, which was much appreciated.

The Club was fortunate to have a programme of expert speakers during the year, who between them covered a wide range of ornithological subjects. Meetings were arranged to take advantage of the visits to Britain of Dr Richard Liversidge, Dr David Peakall and Dr Algirdgas Knystautas. As in previous years, the photographs used by the speakers as illustration were of very high quality.

The meetings, other than the Conversazione, were all held in the Senior Common Room, Sherfield Building at Imperial College, London, and were attended by a total of 648 members and guests.

The Club also staged an exhibition jointly with the British Ornithologists' Union, displaying their publications at the Bird Fair at Rutland Water in Leicestershire at the end of August.

Committee. The Committee met seven times during the year and the attendance by its members was 90%. A new recruitment leaflet was produced and was displayed at Rutland Water and at Christchurch, New Zealand. It is also being routinely sent to newly elected members of the Union. A list of paid-up members has been prepared and is to be published with the *Bulletin* Index for Volume 110 during 1991. Reprinting copies of back numbers to complete the stock was continued, and complete runs of the *Bulletin* can now be supplied back to Vol. 27 (except for the special Vols. 28, 30, 32 and 34, which were annual Migration Reports).

Deaths. It is with very great regret that the Committee reports the deaths in the past year of Dr G. Beven (Member 1948–1990, Committee 1954–1958, 1976–1977, Vice-Chairman 1977–1980), R. D. Etchécopar (Member 1952–1990) and J. E. Jany (Member 1958–1990).

Dr Beven was nominated by the Committee for election as Chairman in 1980 and it was a great sadness that he had to withdraw because of ill-health just before the meeting at which he would have been elected.

Membership. In 1990 there were 20 new members, and 2 members who were in arrears in 1989 paid up to date. There were 10 resignations from 1 January 1990 and 29 members failed to pay their subscriptions for the year. Paid-up membership at 31 December 1990 was 623, 390 members within the U.K. and 233 members overseas.

The membership of 13 members was terminated as their subscriptions remained unpaid for 1989 and 1990.

Bulletin sales. Non-member subscribers to the *Bulletin* in 1990 were 168 (25 U.K., 143 Overseas). The Club is again indebted to Mrs F. E. Warr for the great deal of work she has undertaken not only in looking after the stock of back-numbers of the *Bulletin* but also in dealing with the sales of back-numbers and separates for authors.

Finance. The accounts for 1990 will be circulated at the Annual General Meeting and subsequently published in the *Bulletin*. Members who wish to have a copy before the Annual General Meeting are asked to apply to the Hon. Treasurer.

Bulletin. The Club has been very privileged from 1976 to have the services of Dr James Monk as Editor of the *Bulletin*. The consistently high standard of the *Bulletin* during his term of office is recognised worldwide. He felt it was time for him to stand down, and it is with regret that the Committee has accepted his resignation from the end of Vol. 110. James Monk's wise and kindly counsel will be missed at Committee meetings. However, he is already at work on a special issue for the Club's centenary in 1992.

The Club has been extremely fortunate to have the agreement of Dr David Snow, lately of the Sub-department of Ornithology, British Museum (Natural History), past editor of *Ibis* and a scientist of great international standing, to succeed Dr Monk from the beginning of Vol. 111.

This is the third volume in the last 3 years to have included over 200 pages (208, 247, 227). Vols. 96–99 (1976–79) averaged 145.5 pages, Vols. 101–105 averaged 153.6 pages and Vols. 106–110, of the last 5 years, averaged 210.8 pages, an increase of 22% over 1967–75 and of 49% over 1976–79. This is most welcome, indicating as it does continuing and increasing submissions of excellent papers from authors worldwide, as well as the satisfactory nature of the Club's finances. Vol. 110(1) contained the first colour plate that has appeared in the *Bulletin*, thanks to the generosity of the authors and discoverers of the new species there illustrated.

Papers have included descriptions of one new species and possibly 2 others, and 4 new subspecies; new distributional data from Serengeti, Liberia, the Philippines, Bolivia, Brazil, Colombia, Ecuador,Guyana, Paraguay and Venezuela; several first descriptions of nests and eggs; records of weights; descriptions of pterylosis; discussion of migrant records and other field observations; and, as always, various taxonomic, systematic and nomenclatural opinions and reviews.

The September issue welcomed, for the first time in 49 years, the Chairman's Report at the dinner following the Annual General Meeting, at one time a regular feature of the Club's year.

ANNUAL GENERAL MEETING

The Annual General Meeting of the British Ornithologists' Club will be held in the Senior Common Room, Sherfield Building, Imperial College, London SW7 at 6 p.m. on Tuesday, 21 May 1991.

AGENDA

1. Minutes of the 1990 Annual General Meeting (see *Bull. Brit. Orn. Cl.* 110(3): 113–114).
2. Report of the Committee and Accounts for 1990.
3. *The Bulletin.*
4. The election of Officers. The Committee proposes that:—
    (i) Mrs A. M. Moore be re-elected Honorary Secretary
    (ii) S. J. Farnsworth be re-elected Honorary Treasurer
    (iii) Dr J. F. Monk be elected Member of the Committee (*vice* R. H. Kettle, who retires by rotation and is therefore not eligible for re-election).
5. Any other business of which notice shall have been given in accordance with Rule (12).

By Order of the Committee
AMBERLEY M. MOORE *Honorary Secretary*

The eight hundred and third meeting of the Club was held on Tuesday, 23 October 1990 in the Senior Common Room, Sherfield Building, Imperial College, South Kensington at 6.15 p.m. 26 members and 11 guests attended.

Members present were: R. E. F. PEAL (*Chairman*), Dr H. Q. P. CRICK (*Speaker*), M. A. ADCOCK, Miss H. BAKER, D. R. CALDER, Cdr M. B. CASEMENT RN, Dr R. A. CHEKE, I. COLLINS, P. J. CONDER, J. H. ELGOOD, S. J. FARNSWORTH, G. D. FIELD, Dr L. D. C. FISHPOOL, D. GRIFFIN, Dr P. LACK, Revd G. K. MCCULLOCH, Dr J. F. MONK, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, A. J. RANDALL, V. SAWLE, Dr R. C. SELF, R. E. SHARLAND, N. H. F. STONE, Dr A. TYE.

Guests present were: Mrs B. ADCOCK, Mrs J. CALDER, Miss C. DOVEY, Mrs F. FARNSWORTH, Miss K. HOFF, Mrs I. MCCULLOCH, P. A. MARRACK, P. J. MOORE, Miss D. RIDGELY, Dr C. TINGLE, Mrs H. TYE.

After supper, Dr Humphrey Crick gave the address, illustrated with excellent photographic slides, on tsetse fly control in Africa and its effect on the avifauna there. He outlined the history of the methods of control—from game removal, spraying high and low concentrations of DDT, and later pyrethrum-based pesticides, to the recently developed method of control, the 'cow in a bottle'. He described the studies undertaken on the effects of pesticides on non-passerine and passerine birds. The effects of DDT, already known in Europe, of the thinning of egg shells in some species were shown to be manifest in Africa also. It is thought that control of the tsetse fly may accelerate problems of habitat degradation due to rapid human settlement and increases in the number of domestic livestock in the cleared areas.

The eight hundred and fourth meeting of the Club, a Conversazione, was held on Wednesday, 5 December 1990 at the 20th International Ornithological Congress at Christchurch, New Zealand. It was well attended by members of the Congress (who included some 52 members of the British Ornithologists' Club).

Members present included: R. E. F. Peal (*Chairman*), Dr J. F. Monk (*Editor*), Dr J. S. Ash, K. D. Bishop, Mrs D. M. Bradley, M. D. Bruce, Dr H. Q. P. Crick, J. Fanshawe, Dr C. J. Feare, Dr D. T. Holyoak, Dr D. C. Houston, R. Kettle, Dr R. Liversidge, D. G. Medway, D. S. Melville, Mrs A. M. Moore, Dr G. Morel, Dr M-Y. Morel, Mrs M. N. Muller, Dr T. Oba, W. S. Peckover, Dr K. Schuchmann, Dr S. Somadikarta, Dr A. L. Spaans, Dr W. Thiede, Dr C. G. Violani, Dr R. Wilkinson.

Guests attending included: Dr M. Abs, A. Anderson, B. Arvidsson, Mrs J. W. Ash, Dr G. Aulen, Dr A. Bankovics, Ms S. Bauman, Dr L. Bennum, Dr R. Bierregaard, Dr U. Beichle, M. Braun, Dr M. Brooke, Mrs I. Bullock, K. Davis, Ms A. Davis, M. Eens, Dr R. Fleischer, R. C. Fotso, Dr C. Francis, Dr C. A. Galbraith, Mrs A. Galbraith, Dr A. Goldsmith, Ms G. Griffiths, Mrs J. Hawkins, J. R. Henderson, B. King, Mrs V. Liversidge, Dr M. Louette, Dr M. McNicholl, L. McPherson, G. F. Mees, Mrs V. Mees-Balchin, Prof. M. Milone, Dr P. Monaghan, Mrs .D Monk, Ms M. Morin, C. A. Muller, R. Neegaard, Dr D. Nettleship, Mrs B. Peal, Ms R. Pinxten, Dr A. Richford, M. Robbins, C. Robertson, Dr R. Robertson, P. Robertson, P. Ryan, Prof. R. Ryder, Mrs A. Ryder, F. Saris, Dr H. Schulz, Dr S. Severinghaus, Dr G. Shannon, G. Shannon, R. Slack, Mrs M. Spaans-Scheen, Dr P. Stettenheim, Dr D. Summers-Smith, Dr W. Suter, Mrs D. Suter, Dr B. Sutherland, Dr K. Swennen, Ms C. Tarr, Dr U. Thiede, Dr A. Turner, Prof. M. Wada, Dr D. Wallsschlager, Ms J. Wieneke, Mrs L. Wilkinson, Dr K. Witt.

The eight hundred and fifth meeting of the Club was held on Wednesday, 12 December 1990 in the Senior Common Room, Sherfield Building, Imperial College, South Kensington at 6.15 p.m. 25 members and 21 guests attended.

Members present were: D. Griffin (*Vice-Chairman*), M. A. Adcock, B. M. Beck, P. J. Bull, Cdr M. B. Casement RN, I. Collins, P. J. Conder, Dr R. A. F. Cox, S. J. Farnsworth, A. Gibbs, K. W. Henshall, T. J. James, Dr J. A. K. Meldrum, Revd G. K. McCulloch, T. R. Mills, R. G. Morgan, Dr R. P. Prys-Jones, A. J. Randall, M. L. Romer, V. Sawle, Dr R. C. Self, P. J. Sellar, A. R. Swash, N. H. F. Stone, J. J. Wheatley.

Guests present were: Dr A. Knystautas (*Speaker*), Mrs B. Adcock, N. V. Belyalova, O. V. Belyalou, N. Bucknell, S. Chapman, Mrs F. M. Farnsworth, J. B. Fisher, Miss E. Green, G. E. Green, Mrs B. M. Gibbs, Mrs S. Griffin, D. Harris, B. Hillcoat, Ms K. Hoff, Mrs N. Liddell, Mrs I. McCulloch, E. Potapov, J. Sawle, Mrs G. D. Swash, M. Wilson.

After supper it was a pleasure to welcome again Dr A. J. Knystautas who spoke on the 'Avifaunal Composition of the USSR'. After a general introduction to the natural vegetation regions of this vast country, Dr Knystautas conducted us through a region by region account of the avifauna illustrated by superb slides. Of particular interest was his account of the distribution of species such as the accentors, of which seven species are found within the continental boundaries of the USSR.

The activity of birds during snow-storms in high-level woodlands in Peru

by J. Fjeldså

Received 24 June 1990

Small woods dominated by *Polylepis* trees occur locally in the steppe-like habitats of the high Andes, usually at 4000–4500 m and isolated some distance above the main treeline. This habitat has been reduced by long-term climatic cycles (see, e.g., Hansen *et al.* 1984) and human activity, probably since pre-incaic times (Ellenberg 1958, Ansión 1986, Fjeldså 1987, Fjeldså & Krabbe 1990: 23–24).

Several of the bird species inhabiting these habitat islands have hardly ever been seen outside them, and therefore would seem to be sedentary. As a result of the habitat fragmentation, these birds have relict distributions. Some populations of only a few pairs may be separated by tens of kilometres from other conspecific populations. For a full understanding of the biogeographic patterns and differentiation of local populations (see, e.g., Vuilleumier 1984) it is important to know whether these birds are truly sedentary, or disperse occasionally. Some high-altitude birds make downslope migrations as part of their annual cycle. In this case, they could disperse by descending and ascending through different valleys. Other species are found in the high-level woods at all seasons. For these, the most likely opportunity for dispersal would be during spells of extreme weather, especially when the highlands sometimes become covered by snow.

O'Neill & Parker (1978) describe one incidence of a movement of birds down the Peñas canyon in Cordillera Vilcanota (Cuzco, Peru), when a snow-storm swept this area. The migration mainly involved birds of open habitat, but also *Chalcostigma stanleyi* and *Xenodacnis parina*, which live in the upper parts of the canyon in tiny *Polylepis* patches on the surrounding mountain crests. Below follows the first account of observations made within *Polylepis* woodland during snowfall.

Case studies

Snowfall in the Abancay mountains

I spent 22 November to 6 December 1989 in the highland between the Apurimac and Lambrama valleys SE of Abancay in Apurimac, Peru, as part of an extensive study of relict woodlands in the high Andes (see Fjeldså 1987, in press, Frimer & Nielsen 1989). This area of 20 × 30 km of rugged puna grassland and alpine habitat is intersected by valleys with scattered woodlands at 3400–4000 m (*Eupatorium*, *Escallonia*, and some *Myrsinanthes*, *Polylepis weberbaueri* and *Vallea stipularis*), and has several discrete habitat islands of *Polylepis incana* and *subsericans* at 4100–4600 m. These latter woodlands were exceptionally dense and lush, most trees 10–15 m tall with trunks 0.4–1 m thick, dense regrowth along most edges and in the clearings, and the larger trees heavily loaded with mosses and vines. The forest bottom was shady, with thick litter and moss, and with undergrowth of nitrophilous plants locally. (Most other *Polylepis* woods, in contrast, represent mosaic habitat with broken canopies, small and gnarled trees, and minimal regeneration because of grazing and burning of the grass. The woodlands of the Abancay mountains had an open and bushy structure only on steep, rocky crests.)

The effect of snowfall was witnessed in a 70-hectare forest patch in Quebrada Balcón. Only its lower fringe, at 4150 m, was used by man, who took fallen trunks and side-branches for firewood. The terrain was very difficult for walking, and there were no signs of human influence or grazing by cattle more than 200 m inside the lower forest edge. The most important vine, *Salpichroa* (Solanaceae), formed curtains 5–10 m high, hanging from the canopy, adorned with myriads of yellow tubular flowers. This must be one of the least man-influenced habitat islands in this elevational zone in Peru, and the place is therefore particularly suited for studies of the functioning of the ecosystems of Andean high-altitude woods.

During October–December the weather was generally fine and sunny, but with frost every night. The situation changed during the night 26/27 November, when the area became enveloped in mist. The whole of the following day was rainy with periods of hail and snow, but the ground remained snow-free until the following night. On the morning of 28 November the canopy as well as the forest floor was covered by 5–10 cm of dry snow, and there was even deeper snow in the grassland. The conditions in the upper part of the wood, at 4500 m and within the clouds, were most unpleasant, but most terrain below 3900 m was snow-free. The snowfall diminished gradually, but inside the forest the snow continued to drop from the branches, first as fine powder, then as lumps and drops and water. In the lower part of the forest, the canopy (and tall puna grass and rocks in the open land) was snow-free at noon, but in the evening there was still some snow among the tufts of tall grass and herbs. There were still occasional showers of rain and hail, and the upper ridges continued to have snow.

Bird observations

The observations on 27 November, 28 November (from 07.45 until sunset) and on the morning of 29 November consisted of continuous watching from sheltered places among rocks and while stealing slowly through the forest. Mist-netting was done from midday of 28 November. Unfortunately, observations on the 28th did not cover the upper ridges, or woodlands situated below 3900 m.

Altogether 34 bird species were recorded in the Balcón forest in these three days. This total includes typical highland species and birds otherwise associated with lower elevations, including large numbers of hummingbirds (*Aglaeactis castelnaudii*, *Patagona gigas*, *Pterophanes cyanoptera*). Large numbers of grassland granivores (notably *Phrygilus unicolor*) spent the night in the forest. Passerines of the puna zone normally sleep in caves or holes in banks (Dorst 1956), but it was characteristic of this mountain tract that the grassland granivores assembled by night to sleep in trees.

Other woodland patches visited in this highland had 30–39 species each. A similar richness of species has only been found in a few *Polylepis* tracts in Cordilleras Blanca (Ancash) and Vilcabamba (Cuzco) out of a few hundred field stations in the puna zone (compare data in Vuilleumier & Simberloff 1980, Fjeldså 1987 and Frimer & Nielsen 1989).

The bird activity on 27 November differed from that of days with fine weather by a low incidence of song, especially in the afternoon. During the night 27/28 November (when I was often awake) no calls indicating downwards migration could be heard, but at 07.55 one *Phrygilus unicolor* was glimpsed flying down the valley. As the grassland was afterwards found to be 'lifeless', I assume that most grassland granivores had fled down the valley immediately after dawn, maybe to some 'corrales' with cattle 1 km below, or at least to below the zone covered by snow. *Asthenes humilis* and *A. modesta* were not heard in the grassland before 10.10, but may have been hiding in nest-holes or among tall grass. *Colaptes rupicola*, *Cinclodes fuscus* and a few *Zonotrichia capensis* stayed just inside the lower forest edge in the morning, and these birds and *Phrygilus* species were not seen in the grassland until bare spots appeared on rocks and near creeks at 10.45.

Hummingbirds fed apparently unaffected in the snow-clad canopy from 07.45 (as seen by O'Neill & Parker 1978). The snow cover was rather light on the *Salpichroa* curtains, and the hummers could sweep some snow away with their wing-whirring. They sometimes perched briefly on branches with deep snow. *Diglossa brunneiventris* and *Conirostrum cinereum* were also active early, as were breeding pairs of *Ochthoeca oenanthoides* and *rufipectoralis*. The two first probed *Salpichroa* flowers, the two latter showed their usual perch-to-ground sallies, and *O. rufipectoralis* was seen hopping on the ground in 5 cm snow for shorter periods, chattering frequently. However, *O. oenanthoides* did not feed from rocks outside the forest until after noon. Also *Troglodytes aedon* fed early, in snow-free recesses below rocks and boulders.

There was no early morning song. The first *Ochthoeca* strophes were heard 08.20, full song (mainly by *Troglodytes aedon*) from 09.00 onwards, but the amount of song remained subnormal the entire day.

From 09.00 a number of bird species fed in the canopy. The feeding of *Anairetes alpinus* involved short sallies and hover-gleaning which whirled some snow off the foliage, and the bird could use hovering purposefully to wipe the foliage before perching. *Xenodacnis parina* managed well as it gleans only undersides of leaves. *Carduelis atratus* and *crassirostris* were seen in the tree-tops.

Although *Scytalopus* (unnamed; see Fjeldså & Krabbe 1990: 440 and 847) and *Grallaria andicola* were not recorded before 10.40 and 11.00, respectively, they were probably present all the time, hiding in snow-free recesses. *Turdus chiguanco* was often seen hopping in the snow, but preferred places with thin snow cover below dense canopy, as did *Cinclodes (excelsior) aricomae*, which dug through the snow with its long beak.

Anairetes alpinus showed a markedly higher density in the lower part of the forest early on 28 November than the day before, suggesting that many birds had descended from the upper parts. *Leptasthenura xenothorax* occurred in the lower part of the forest this morning, but only near the upper ridges the preceding afternoon. This species feeds along thick branches and trunks (unlike other *Leptasthenuras*), as does *Cranioleuca albicapilla* and *Oreomanes fraseri*, which remained on their territories, although apparently inactive until 10.30.

The species lists and numbers of birds present in small *Polylepis* copses 80, 250 and 800 m below the continuous forest tract did not change between 27 and 28 November, and no birds were seen crossing open land between the woodland patches. Therefore, although some forest birds may have abandoned the misty and cold upper parts of the large forest, the weather did not induce these birds to pass from the lower edge of the large woodland to the smaller woodlands below. These woodland patches are fully visible from the large woodland, and form a chain down the valley.

There may, however, have been a few exceptions. On 28 November *Pterophanes cyanoptera* was not seen until 11.20. This extremely fast flyer may have gone lower down in the valley for a few hours. Also *Chalcostigma stanleyi* seemed to be temporarily absent, and this may also have been the case with *Polioxolmis rufipennis*. A single *Aeronautes andicolus* (otherwise seen only below 3200 m) passed at 12.40.

There was no mortality of young in 4 passerine nests checked after the snow-storm.

Other incidences of snowfall

During 14–17 March 1987, P. Arctander stayed at 4300 m near the upper edge of the *Polylepis* woodland near Abra Malaga above the Peñas canyon in Cuzco (Fjeldså 1987, loc. 47). This is a fairly open semihumid woodland, with a high number of species. The weather was foggy during this visit, with rain, hail and snow throughout the period, and on 15–16 March there was up to 10 cm snow on the ground, and the canopy was also densely covered. A detailed record was not made, but the following species were noted in the upper part of the wood during periods with snow: *Phalcobaenus megalopterus, Chalcostigma stanleyi, Colaptes rupicola*, *Cinclodes fuscus*, *Leptasthenura xenothorax* and *yanacensis*, *Grallaria andicola*, *Scytalopus magellanicus simonsi*, *Polioxolmis rufipennis*, *Ochthoeca fumigatus*, *Muscisaxicola albifrons*, *Oreomanes fraseri*, *Catamenia inornata*, *Phrygilus unicolor*, *Carduelis atratus* and *crassirostris*. Most birds retreated down-hill during the worst periods, but probably only went to the lower part of the woodland, at 4000 m. The birds of this woodland seem regularly to roam between the upper and lower parts, often in mixed feeding parties. *Leptasthenura yanacensis* maintained normal feeding routines in the upper part of the woodland throughout the period, and *Scytalopus*, *Grallaria* and the three tyrant flycatchers were seen here all the time.

N. Krabbe stayed at this same site 16–18 October 1983, and had very cold weather all the time, and a snow-storm on the last day. *Leptasthenura* species and *Cinclodes fuscus* visited the upper ridge to receive the first morning sun; for the rest of the period most birds deserted the camp-site area near the crest, or moved rapidly up- and down-hill in response to weather changes. Only a *Grallaria andicola* was seen near the crest during the worst period. However, it was N.K.'s impression that the birds remained in the lower part of the woodland, but stayed quiet and inactive for periods. Parties of *Aratinga (mitrata?)* were seen passing, but not during the periods of snowfall.

On two occasions I have seen the puna grasslands and alpine habitats surrounding the Junin Altiplano covered by 10–15 cm of snow. In this area there is no easy access to lower valleys. Finches (*Sicalis*, *Phrygilus*) congregated in large flocks on damp snow-free meadows along the shores of lakes in altiplano areas. I also noted several ground-tyrants there. This happened in October and February, when these birds would normally occur as scattered pairs or small groups on rocky or scrubby slopes with potential breeding habitat.

Discussion

Many birds of the open highlands fly down into the valleys or assemble on humid lake-shores in periods with snow. The present account shows that many of the specialized inhabitants of the *Polylepis* woodlands, in contrast, are able to stay in their high-altitude habitat, at least if the snow does not remain very long. In fact, snow very rarely lasts more than a couple of days in the puna zone, except in a few very high passes.

It seems that *Pterophanes cyanoptera* and *Chalcostigma stanleyi* are opportunists in their altitudinal distribution. Also *Polioxolmis rufipennis*, which finds its prey on the ground in open country surrounding the woodlands (Fjeldså 1990), may move in response to snowfall. However, most birds in Quebrada Balcón remained on their territories or made minor vertical movements within a tract of continuous forest habitat. They maintained fairly normal activities, except for reduced song and some hours of inactivity in the morning, until the snow fell off the foliage. There was no indication that the snowfall was a serious threat. The observations at Abra Malaga showed that the birds became very quiet, reduced their activity and avoided the most inhospitable high parts of their habitat.

It is remarkable that the birds in Quebrada Balcón were reluctant to leave the lower edge of the woodland, considering the short distances between the woodland patches. This makes me doubt that they knew that the copses formed potential ‘stepping stones’ by which they could reach snow-free lower-level woodland within a few minutes. We cannot conclude that downward migration never occurs, but it seems clear that the majority of birds of high-level woodland are well adapted to resist spells of severe weather.

It should be remarked that the *Polylepis* patches near Abancay and Abra Malaga are exceptionally rich in moss and creepers, which represent fine subcanopy feeding microhabitats. Other, drier and epiphyte-free woods may not offer quite the same opportunities for finding food during snowfall. Some of these woods have few species (e.g., *Ochthoeca oenanthoides*, *Oreomanes fraseri*, *Carduelis crassirostris*, *Polioxolmis rufipennis* and hummingbird species with slightly curved bills; see Fjeldså, in press). Most of these (but never *O. fraseri*) can sometimes be seen in terrain with scattered scrub or in bushy or rocky places in the valleys.

The *Polylepis* forest offers many opportunities to maintain some feeding routines despite some snow. Although few insects feed on *Polylepis*, these trees represent a good refuge habitat for insects (several moths even showing specific adaptations for crypsis on *Polylepis* bark; O. Karsholt, pers. comm.). This is due to the rich supply of sheltered and frost-free microhabitats in the loose, laminar *Polylepis* bark and in the moss and among epiphytes hanging from the branches. Thus, there will always be food available for scansorial and bark-peeling species of birds (*Leptasthenura xenothorax*, *Cranioleuca* species, and especially *Oreomanes fraseri*). Also the pendent flowers of many creepers will be accessible whilst the foliage is snow-clad. Since most *Polylepis* woods grow in rocky terrain or on coarse boulders, there will usually also be cavities with snow-free refuges for ground-feeding birds. Those members of the *Asthenes* *dorbignyi* superspecies that frequent *Polylepis* woods (Fjeldså & Krabbe 1990: 365–370) feed on fairly open ground and seem to live only in semi-arid highlands, where deep snow is unlikely to occur.

It is my experience, when making study skins of *Polylepis*-adapted birds, that they have no significant reserves of subdermal fat. Either the habitat offers little surplus food, or the birds do not usually need to have energy reserves for the critical periods. (An exception is *Xenodacnis parina*, which often is very fat, and sometimes siskins. This aspect certainly deserves a more careful study.)

For woodland birds which show an innate fear of leaving wooded terrain, several days of snowfall may be fatal in *Polylepis* tracts which have become isolated far away from lower-level woodlands. A fairly rich fauna (which includes some ground-feeding birds) is found in the extensive tracts of *Polylepis* in the northern parts of the Titicaca basin (Fjeldså 1987), a highland area that is remote from lower-level habitats. However, heavy snowfall is rare in this rather dry area (Monheim 1956). At present, the largest assortment of high-altitude forest birds (30–45 species per woodland patch) is found where *Polylepis* woodlands are connected with lower-level woodlands by strips of bushy vegetation or at least 'stepping stones' in the river gorges. There may be two reasons for this: first, that the potential dispersal corridor makes it easier for species which are reluctant to cross open terrain to move down to safety during extreme weather; and second, that it permits faunal enrichment from below. *Polylepis* woodlands in close contact with lower-level wood may have breeding populations of a number of species normally associated with lower-temperate woodlands (Fjeldså, in press). Strict high-level woodland birds (*Leptasthenura yanacensis*, *Anairetes alpinus*, *Poospiza alticola*) will usually manage this potentially competitive situation by staying in the rather scattered wood on rock-ledges and ridges in the very highest parts, except maybe during periods of snow.

Acknowledgements

The studies have been financed mainly by the Danish Natural Science Research Council (Grant J.nr 11-7829 in 1989) and the Zoological Museum, University of Copenhagen. For help and company in the field during the studies of *Polylepis* woods I wish to thank P. Arctander, C. Aucca C., V. Baptista V., E. Bering, D. Boertmann, J. Brandbyge, O. Karsholt, N. Krabbe, D. Ricalde and B. Walker. I thank P. Arctander, N. Krabbe and J. F. Monk for their useful comments on manuscript drafts.

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Sipia rosenbergi (Formicariidae) is a synonym of *Myrmeciza [laemosticta] nigricauda*, with comments on the validity of the genus *Sipia*

by Mark B. Robbins & Robert S. Ridgely

Received 29 June 1990

Abstract.—*Sipia rosenbergi* is a synonym of *Myrmeciza [laemosticta] nigricauda*. We recommend, based on vocalizations, morphology and behaviour, that both *Sipia nigricauda* and *Sipia berlepschi* be transferred to *Myrmeciza*. We believe that *M. nigricauda* and *M. laemosticta* are sister taxa, and that *berlepschi* is closely related to them. In South America, *M. laemosticta* ranges only from northern Colombia east to extreme western Venezuela; it does not occur along the Pacific coast of Colombia and Ecuador. The races *bolivari* and *venezuelae* of *M. laemosticta* do not merit recognition, and should be synonymized with *M. laemosticta palliata*.

In July–August 1987, we and others from the Philadelphia Academy of Natural Sciences (ANSP) staff surveyed the avifauna at El Placer along the western base of the Andes, at c. 670 m in elevation, in western Esmeraldas in extreme northwestern Ecuador. While in the field we were puzzled as to why we could find only *Sipia rosenbergi*, and never *Myrmeciza laemosticta*, as both had been reported previously from this area (Salvin & Godman 1892, Chapman 1926). Upon our return from the field, we realized that the ANSP collection did not have any material of *Myrmeciza laemosticta nigricauda* (the race endemic to Pacific southwestern Colombia and northwestern Ecuador; Chapman 1926), even though we have good representative collections from the lowlands of this area. The taxon *nigricauda* was described from a female specimen collected at Intac (=Intag), Imbabura, Ecuador, in the extreme northwestern corner of the country (Salvin & Godman 1892). Further puzzled by the fact that all other races of *laemosticta* have rufous brown and not blackish tails, we compared our series of female *Sipia rosenbergi* to Salvin

TABLE 1

Sample size, means and standard deviations of selected measurements (mm) of *Myrmeciza laemosticta*, *M. nigricauda* and *M. berlepschi*. Measurements were not taken of specimens in the Colección Ornitológica Phelps. Sexes, and subspecies of *laemosticta* are pooled

	M. laemosticta (n=49)	*M. nigicauda* (n=18)	*M. berlepschi* (n=14)
Wing length (chord)	63.8 (2.6)	63.3 (1.8)	64.7 (1.7)
Tail	44.9 (2.1)	46.7 (1.8)	43.1 (2.2)
Tarsus	25.9 (0.9)	27.7 (0.6)	25.7 (0.6)
Culmen	20.1 (0.7)	19.8 (0.9)	20.7 (1.1)

and Godman's original description of *nigricauda*. Although the original description lacks detail, it indicated that female *nigricauda* and female *rosenbergi* were extremely similar, if not identical.

We then examined two of the three specimens (AMNH 108049, 117861) of *nigricauda* that influenced Chapman's placement of *nigricauda* as a race of *laemosticta*. These two specimens were identical to the ANSP series of female *Sipia rosenbergi*. We then examined virtually all material in American museums of these taxa from Colombia and Ecuador.

In order to confirm our suspicion that *Myrmeciza laemosticta nigricauda* and *Sipia rosenbergi* represented the same taxon, we requested that Niels Krabbe and Nigel Collar compare the types of *nigricauda* and nominate *laemosticta* from Costa Rica, both housed at the British Museum (Natural History), Tring, with a male and female of *rosenbergi* collected recently in Ecuador (Zoologisk Mus., Denmark, uncatalogued; ANSP 180339, respectively). Photographs taken by Collar clearly show that on plumage characteristics the type of *nigricauda* is indistinguishable from the female *rosenbergi*. Measurements taken by Krabbe of wing, tail, tarsus and bill could also not distinguish these taxa (see Table 1). We quote Krabbe (*in litt.*) on their comparison: ". . . the female *rosenbergi* is a fine match of the type of *nigricauda*, and there is no doubt that they are one and the same form." Therefore *Sipia rosenbergi* and *Myrmeciza nigricauda* are the same taxon.

Female *nigricauda* do differ from female *laemosticta* in several subtle plumage characters. The taxon *nigricauda* has less extensive white markings on the throat (in width and in extension down the throat) than *laemosticta*, the tail is blackish, and the rufous brown of the back, flanks and crissum is less intense than in *laemosticta*.

Males of these species are very different, as different, for example, as male *Myrmeciza laemosticta* is from *M. exsul*. Had the holotypes been males, there would never have been any confusion. Male *laemosticta* have chestnut flanks, crissum and tail, whereas these regions are uniform slate-grey in male *nigricauda*. Furthermore, male *laemosticta* possess a well-defined black throat, unlike *nigricauda* which has a very indistinct blackish throat that blends into the dark grey upper chest. We have not examined a single male specimen that was labelled as *M. laemosticta nigricauda*, because, not surprisingly, all the males were identified as *Sipia rosenbergi*!

Because the name *nigricauda* (Salvin & Godman 1892) has priority over *Sipia rosenbergi* (originally described as *Cercomacra rosenbergi* by Hartert in 1898), the valid species name becomes *nigricauda*. With the exclusion of *nigricauda* from *M. laemosticta*, the distribution of *Myrmeciza laemosticta* no longer includes the Pacific lowlands of Colombia and northwestern Ecuador (Chapman 1917, Peters 1951, Hilty & Brown 1986). This area is inhabited only by *nigricauda*. Moreover, the range of *nigricauda* in Colombia has been given as only the Río San Juan, Chocó, southward (Hilty & Brown 1986). Specimens of *nigricauda* in the AMNH (443294) and ANSP (147226) collections document that this species occurs at least as far north as the southern Baudó Mountains, Chocó, Colombia (5°40′N, 77°16′W), and our recently collected material (ANSP 177593–5; Robbins & Ridgely 1990) establishes that this species also occurs as far south as the Prov. El Oro, Ecuador. *Nigricauda* may range as far north as the Río Imamadó, Antioquia, Colombia (7°56′N, 76°37′W; see Fig. 1 for approximate location), as Haffer (1975) took a male there that he ascribed to *M. laemosticta nigricauda*. Unfortunately, we have been unable to confirm whether this is indeed *nigricauda*, as the specimen apparently is deposited in Colombia (J. Haffer, *in litt.*). On the other hand, three female AMNH specimens (133503, 133504, 133506) that were taken at Puerto Valdivia (7°18′N, 75°23′W) and were originally identified as *M. laemosticta nigricauda*, are in fact *M. laemosticta palliata* (the latter clearly being a race of *M. laemosticta*; see discussion below). Figure 1 depicts the range of *laemosticta* and *nigricauda*, based on the above clarification and re-examination of specimen data.

Validity of the genus *Sipia*

Although the above clarifies the appropriate treatment of *nigricauda*, it does not resolve the relationship of this species and *berlepschi* (the type species of the genus *Sipia*), both of which are currently placed in the genus *Sipia*. *Sipia berlepschi* is another species endemic to the Pacific lowlands of western Colombia and northwestern Ecuador. There has been considerable confusion on the generic placement of these taxa. Hartert (1898) originally placed the males of *nigricauda* and *berlepschi* in the genus *Cercomacra*. The female of *berlepschi* was originally described as *Thamnophilus cachabiensis*. Hartert (1902) was the first to recognize that *Thamnophilus cachabiensis* is the female of *berlepschi*.

Hellmayr (*in* Cory & Hellmayr 1924) erected the genus *Sipia* for the species *berlepschi* and *rosenbergi* (=*nigricauda*). He believed that *Sipia* was most closely allied with *Cercomacra*. He distinguished *Sipia* from *Cercomacra* by its shorter and graduated tail, narrower rectrices, and longer and larger tarsus. Since then noone seems to have questioned their generic placement until Hilty & Brown (1986), who commented that *Sipia* might better be included in *Myrmeciza*.

We agree with Hilty & Brown's suggestion, as all of Hellmayr's diagnostic characters for *Sipia*, including the black male plumage of *berlepschi*, are shared by one or more species in the genus *Myrmeciza*. Furthermore, vocally *berlepschi* and *nigricauda* are very similar to species in the genus *Myrmeciza*, e.g. *M. laemosticta* and *M. exsul* (Fig. 2); their

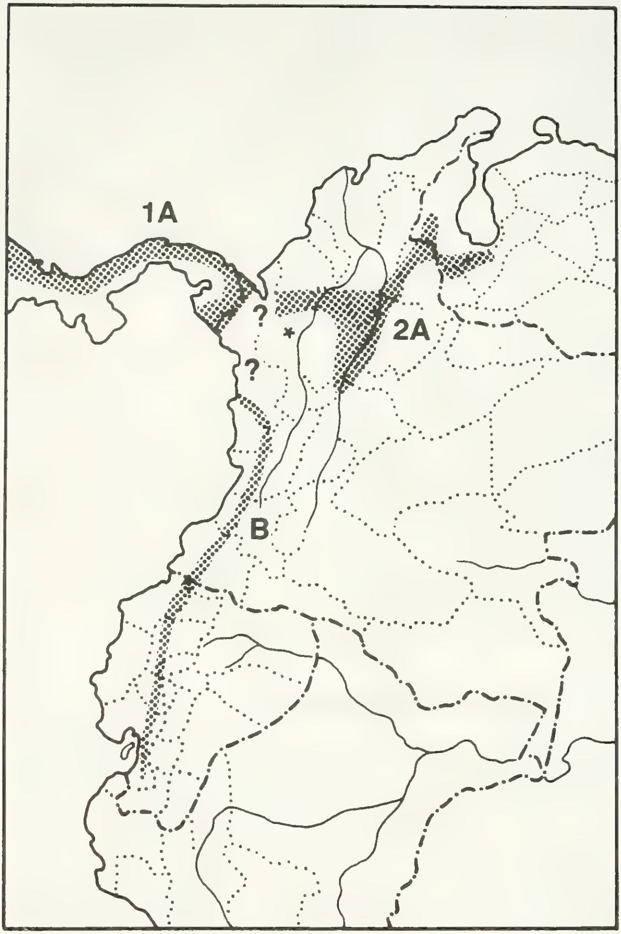

Figure 1. Northwestern South America depicting the distributions of *Myrmeciza laemosticta* (1A, nominate; 2A, *palliata*) and *Myrmeciza nigricauda* (B). It is unknown whether these taxa come into contact in extreme northwestern Colombia, as denoted by the lower question mark. An asterisk (*) indicates a specimen locality, where the species' identity is unknown (see text).

voices (call notes and song) bear no resemblance to any *Cercomacra*. We suspect that Hellmayr knew nothing of the voice of any of these birds when he erected *Sipia* and placed it next to *Cercomacra*. We consider voice to be a much more informative character with regard to defining formicariid generic relationships than some of the rather plastic plumage characters used by Hellmayr.

Figure 2 depicts the close similarities in structure, duration, intensity, and number of notes (7–8 per song) in *nigricauda*, *laemosticta* and *berlepschi*. The frequency of each note in the songs of all three species rises and falls sharply. The taxon *nigricauda* shows less of a frequency change within each note. There are overall differences in frequencies among these taxa's songs: 4.7–5.8 kHz in *nigricauda*, c. 3.0–4.5 kHz in *laemosticta*, and c. 2.0–3.5 kHz in *berlepschi* (Fig. 2). More variation in the pitch of each

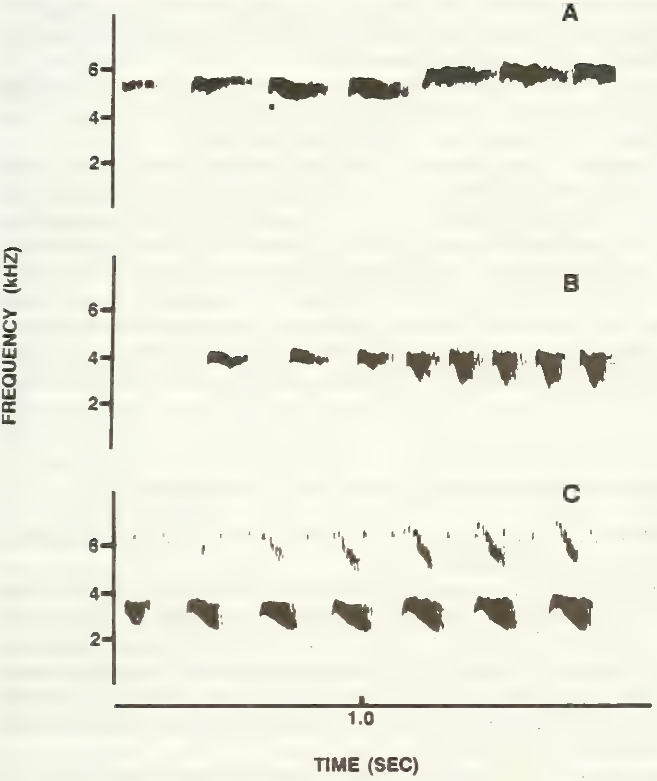

Figure 2. Song spectrograms of A, *Myrmeciza nigricauda*, under natural conditions, July 1987, Esmeraldas, Ecuador (LNS 46620); B, *Myrmeciza laemosticta*, under natural conditions, March 1986, Darién, Panama (Ridgely); C, *Myrmeciza berlepschi*, after playback, January 1983, Valle, Colombia (Ridgely).

species' song exists than is presented in Figure 2, as the frequency can depend on the motivational state of the bird (natural song vs. playback). For example in *nigricauda*, for which we have the most vocal material, the onset of each note can range from c. 4.0 to 5.0 kHz.

The taxa *nigricauda* and *berlepschi* are also quite similar to *M. laemosticta* and *M. exsul* in plumage morphology, behaviour and habitat requirements. The plumages of female *nigricauda* and *M. laemosticta* are extremely similar; indeed, as we described above, the difficulties that museum and field workers have had over the past century in distinguishing them attest to their closeness. If *berlepschi*'s generic placement were based solely on plumage characteristics, its inclusion in *Myrmeciza* might be considered more problematic. Like some of the larger *Myrmeciza* species (e.g. *immaculata*, *fortis*, *melanoceps*), male *berlepschi* is jet black. All black-plumaged *Myrmeciza* species other than *berlepschi* possess bare orbital areas; nevertheless, within the smaller members of this genus the presence or absence of this latter feature is quite variable. For example, *laemosticta*, *nigricauda* and *berlepschi* all lack the bare orbital area, whereas it is pronounced in *M. exsul*, a species that we consider to be more closely related to this species than to any other assemblage in *Myrmeciza*. The female of *berlepschi* is also blackish except for distinct white markings to the feather edges on the throat and breast, not unlike those restricted to the throat of female *nigricauda* and *laemosticta*.

All of these species inhabit the forest understory, where they typically forage in pairs for insects in dense second growth. They seem to be particularly common in shady forest ravines in the foothills.

Given that *berlepschi* has the most differentiated plumage, has dark brown irides (both sexes of *laemosticta* and *nigricauda* have red irides), and is sympatric with *nigricauda*, we hypothesize that its speciation pre-dated the divergence of *nigricauda* and *laemosticta*. We suspect that *berlepschi* was isolated in the Chocó from proto-*nigricauda*/*laemosticta*. Subsequently, *nigricauda* may have also become isolated in a forest refugium in the Chocó during the Quaternary period, as apparently were other endemic taxa that have close relatives in Central America and/or northern Colombia, e.g. *Pteroglossus torquatus sanguineus* and *Ramphastos brevis* (Haffer 1974).

Revision of *Myrmeciza laemosticta* subspecies

In our review, we accumulated a total of 50 specimens of *palliata*, *bolivari* and the nominate race of *laemosticta*.

Todd (1917) described the race *palliata* from Santander, Colombia. The locality, La Palmita, is actually in the department of Cesar, as pointed out by Paynter & Traylor (1981). Peters (1951) gave the range of *palliata* as "Darién; Colombia in departments of Antioquia and Santander". However, Wetmore (1972) recognized that only the Central American nominate race occurred in Panama, and that *palliata* was restricted to northern Colombia.

Meyer de Schauensee (1950) described the race *bolivari* from Quimarí, Bolívar, Colombia. This type locality actually lies in the department of Cordoba, north of the Cordoba/Antioquia border (see Paynter & Traylor 1981), c. 300 km east of the type locality of *palliata*. Meyer de Schauensee characterized *bolivari* as duller, more olivaceous dorsally and on the flanks than *palliata*. However, we do not find this distinction to hold up when seven specimens, including the type, of *bolivari* are compared to a series of *palliata*.

A single male specimen taken at Del Cerro Ayapa, Zulia, Venezuela, c. 200 km northeast of the type locality of *bolivari*, was described by Aveledo & Gines (1949) as a new race, *Myrmeciza laemosticta venezuelae*. This specimen was purported to have a greyer head and less reddish on the back, crissum and upper tail-coverts than *palliata*. Aveledo & Gines were apparently unaware that four of the six specimens of supposed *palliata* that they compared to their type of *venezuelae* were actually of the very distinct nominate race of Central America. These four specimens (1 male, 3 females) were from Panama; as mentioned above, Wetmore (1972) correctly ascertained that all Panamanian *laemosticta* are referable to the nominate race. Had Aveledo & Gines had a series of true *palliata* from northern Colombia they likely would have realized that their type specimen of *venezuelae* was actually a typical example of *palliata*.

The type of *Myrmeciza laemosticta venezuelae* was originally deposited in the Colección Ornitológica Phelps in Caracas, but then transferred to the AMNH, where it remains uncatalogued with a large group of types from the Phelps Collection. Ridgely compared the type to a male *palliata* (AMNH 133504) and found them to be indistinguishable.

In addition, our colleague, John Guarnaccia, compared a pair of our *bolivari* (ANSP 160843, 160844; as mentioned above these are indistinguishable from a series of *palliata*) with 11 specimens of *venezuelae* (all collected since *venezuelae* was described) that are housed in the Colección Ornitológica Phelps. We quote Guarnaccia on his comparison of the ANSP '*bolivari*' specimens with the *venezuelae* material: "ANSP 160843, 160844 are essentially identical to the *venezuelae* series in the Phelps collection." Moreover, he noted that the series of *venezuelae* was quite different from two Panamanian specimens (49505, 49506) labelled as *palliata* in the Phelps collection. As Guarnaccia recognized, these two mis-labelled specimens represent typical examples of the nominate race. Thus, given the above confusion with what nominate and *palliata* races of *laemosticta* really looked like, it is not surprizing that *venezuelae* was erroneously described.

One final comment, and one that further illustrates that *palliata* and *venezuelae* are indeed indistinguishable, should be made regarding the subspecific identification of Venezuelan *laemosticta* specimens. Peters (1951) listed a specimen from La Azulito (= La Azulita), Mérida, under *venezuelae*. However, he added a footnote to the effect that W. H. Phelps had determined that this specimen was actually referable to *palliata*. Interestingly, Phelps later reversed his opinion, as he included this specimen under *venezuelae* in the second edition of the Venezuelan Passeriform Checklist (1963). We find that this specimen (CM 90393), from the easternmost locality for any Venezuelan *laemosticta*, is indistinguishable from material from the westernmost locality (Río Sinú, Cordoba) of *palliata* (USMN 411505-6, 411597, 411593).

We conclude that neither *bolivari* nor *venezuelae* merit recognition. We recommend synonymizing both names under *palliata*. The ranges of recognized subspecies of *Myrmeciza laemosticta* may thus be summarized:

M. laemosticta laemosticta: Costa Rica and Panama (east to Darién).

M. laemosticta palliata: northern Colombia (Sinú Valley eastward) and western Venezuela (Zulia, Mérida).

Acknowledgements

We especially thank Fausto Sarmiento, Juan Carlos Matheus and Miguel Moreno of the Museo Ecuatoriano de Ciencias Naturales de Quito, for logistical and field assistance in Ecuador. The Ministerio de Agricultura kindly provided authorization for our work in Ecuador. We are grateful to Niels Krabbe and Nigel Collar for examining and photographing type specimens in the British Museum (Natural History) at Tring. John Guarnaccia compared ANSP material with a series of *Myrmeciza laemosticta venezuelae* in the Colección Ornitológica Phelps in Caracas, Venezuela. We thank Greg Bundey and Bob Grotke of the Library of Natural Sounds, Cornell University, New York, for use of vocal material and help in spectrogram preparation. Mort and Phyllis Isler graciously provided spectrograms of selected formicariid taxa. Jurgen Haffer provided information on specimen deposition. Kenneth Parkes, Thomas Schulenberg, Douglas Stotz and Guy Tudor made many helpful comments on the manuscript. We extend our gratitude to the following institutions for specimen loans; American Museum of Natural History (AMNH), Carnegie Museum of Natural History (CM), Colección Ornitológica Phelps (COP), Field Museum of Natural History, and the National Museum of Natural History, Smithsonian Institution (USNM).

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Appendix 1. Specimens examined

Myrmeciza laemosticta laemosticta. COSTA RICA: 4 males, 4 females (AMNH); 4 males, 2 females (CM); 1 male (ANSP). PANAMA: 6 males, 4 females (USNM); 2 males, 1 female (COP).

Myrmeciza laemosticta palliata. COLOMBIA: 1 male (AMNH); 5 males, 5 females (USNM); 1 male, 1 female (CM).

Myrmeciza laemosticta "bolivari". COLOMBIA: 2 males, 2 females (USNM); 2 males, 1 female (ANSP).

Myrmeciza laemosticta "venezuelae". VENEZUELA: 3 males, 8 females (COP); 1 male (AMNH).

Myrmeciza nigricauda. COLOMBIA: 2 males, 3 females (USNM); 5 males, 1 female (ANSP). ECUADOR: 2 males, 5 females (ANSP).

Myrmeciza berlepschi. COLOMBIA: 10 males, 3 females (ANSP). ECUADOR: 1 male (ANSP).

Notes on birds from the Upper Noa Dihing, Arunachal Pradesh, Northeastern India

by S. Dillon Ripley, S. S. Saha & Bruce M. Beehler

Received 2 July 1990

Between the years 1979 and 1988, under the sponsorship of the Zoological Survey of India (ZSI), Bombay Natural History Society (BNHS), and Smithsonian Institution (USNM), the authors conducted eight ornithological field trips to the valley of the Noa Dihing River, in the Changlang District (formerly eastern Tirap Dist.) of Arunachal Pradesh, northeastern India (Fig. 1a,b). The main purpose of the research was to document the area's unsurveyed forest avifauna (Ghosh 1987). Initial biological interest in this isolated watershed resulted from the proposal to establish the 2000 km^2 Namdapha National Park in the middle and upper segments of the valley. This tract received formal park status in 1983.

Our survey studies were conducted at localities in and outside the park boundaries. These indicate that there has been significant degradation of the forests and forest faunas in the unprotected areas. It is thus necessary to make every effort to ensure that the Namdapha National Park receives adequate protection from poaching and illegal extraction of forest products of all kinds.

Here we present the highlights of our ornithological observations. A complete account of the expeditions and their findings will appear subsequently (Ripley *et al.*, MS). In the following pages we treat 22 species that are of taxonomic and distributional interest. In our accounts, we follow the sequence and nomenclature of Ripley (1982). Specimens treated to the subspecific level were identified by comparison with material in the collections of the U.S. National Museum of Natural History (Washington, D.C.), the American Museum of Natural History (New York), the Zoological Survey of India (Calcutta), the Bombay Natural History Society (Bombay), and the British Museum (Natural History) (Tring). Our specimens have been deposited in the collections of the USNM, ZSI, and BNHS. All length measurements are in millimetres, all weights in grammes.

Altitudes of the six field camps mentioned in the text and featured in Figure 1b are as follows: 40-mile Camp 800 m, 77-mile Camp 1000 m, Gandhigram Camp 1050 m, Ramnagar Camp 1150 m, Vijaynagar Station 1250 m, Lone Camp 1350 m, Upper (or First Upper) Camp 1500 m, Ridgetop (Second Upper) Camp 2500 m.

WHITE-WINGED WOOD DUCK *Cairina scutulata*

On 8 March 1988, SSS observed a flock of more than 200 in inundated paddy fields near Gandhigram. On 13 March 1988, the research team observed a single individual flying over Vijaynagar station. Birds captured near Miao have been caged for captive breeding under a program directed by the Arunachal Pradesh Department of Forests.

PEREGRINE FALCON *Falco peregrinus*

A single, freshly plumaged adult, perched on a dead limb beside the river at Ramnagar, was observed by BB on 9 February 1988. By plumage the bird was identifiable as the race *japonensis*.

BAMBOO PARTRIDGE *Bambusicola fytchii*

This was the common galliform of the riverine scrub at the Ramnagar Camp in February 1988 and in cut-over scrub around Gandhigram in March 1988. It travelled in small parties, and flushed easily. We heard the species give a complex, strident but musical vocalization, given by several birds at once. It was most commonly heard in the early morning. The birds consumed rice grains left in the fields adjacent to the river.

INDIAN JUNGLE NIGHTJAR *Caprimulgus indicus jotaka*

Our single specimen, a female (ova small), mist-netted in a stand of wild banana at Ramnagar on the night of 16 February 1988, represents the third record of this race in the Indian region (Abdulali & Hussain 1971), and the first from northeastern India. The two other records are from western Bhutan and from a boat at sea, 60 miles northeast of Port Blair, Andaman Islands. We presume that our bird is a wintering migrant from China (Cheng 1987). Weight: 77.

ORANGE-BILLED JUNGLE MYNA *Acridotheres javanicus*

On 8 March 1988, at Gandhigram, BB observed a pair foraging in the company of Common Mynas *A. tristis*. The pair of *javanicus* was considerably more wary than the individuals of *tristis*. SSS reports that the species is common in the lower Noa Dihing. These represent the first records of this species for Arunachal Pradesh.

CORAL-BILLED SCIMITAR BABBLER *Pomatorhinus ferruginosus namdapha*

Specimens collected by BB and SSS in 1988 from the upper Noa Dihing (Lone Camp) agree perfectly with the description of the race *namdapha*, based on specimens obtained at 40-mile Camp in 1979 (Ripley 1980), and support the validity of this new subspecies, still known only from this watershed.

SLENDER-BILLED SCIMITAR BABBLER *Xiphirhynchus superciliaris intextus*

Three specimens from the upper Noa Dihing, collected in 1988, are indistinguishable from the unique type of *intextus* (Ripley 1948), collected at Dreyi, Mishmi Hills, 50 miles to the northwest. Our new specimens also closely approximate a single specimen from northwestern Yunnan (topotypical *forresti*). Further comparison of relevant material from northern Burma and Yunnan may show *intextus* to be synonymous with that subspecies.

Most notable about this species, aside from its remarkably decurved bill, is the variability of the iris colouration. We have records of the following iris colours: red, brown, dark brown, rose, tan, pale grey, and stone yellow. We speculate that the variability in iris colour may relate in some way to sex- and age-related social signalling among members of the small flocks (family groups?) of this species that travel through the thick undergrowth.

LONG-BILLED WREN-BABBLER *Rimator m. malacoptilus*

Our two specimens, mist-netted in forest undergrowth, are indistinguishable from material from Sikkim. This elusive species has been encountered only a handful of times in the last fifty years (Koelz 1954, Smythies 1986, Ali & Ripley 1987, van Marle & Voous 1988).

STREAKED LONG-TAILED WREN-BABBLER *Spelaeornis c. chocolatinus*

We collected two specimens in the upper Noa Dihing (Lone Camp) in 1988. This is the first record of this species from Arunachal Pradesh. In plumage these agree with the nominate race. They are distinct from topotypical *reptatus* from northern Burma, but a single female from northwestern Yunnan is virtually indistinguishable from our birds.

LONG-TAILED SPOTTED WREN-BABBLER *Spelaeornis troglodytoides*

Our two specimens, taken at the Ridgetop Camp in March 1988, are the first for Arunachal Pradesh. The only other specimens from the Indian region were taken in Bhutan by F. Ludlow and B. Biswas. Our material is distinct from the Bhutanese population (*sherriffi*; Kinnear 1934) and from the other closest forms (*souliei* and *rocki*; Riley 1929) that occur in the mountains to the northeast. We thus propose to name the newly-discovered population from the upper Noa Dihing River:

Spelaeornis troglodytoides indiraji subsp. nov.

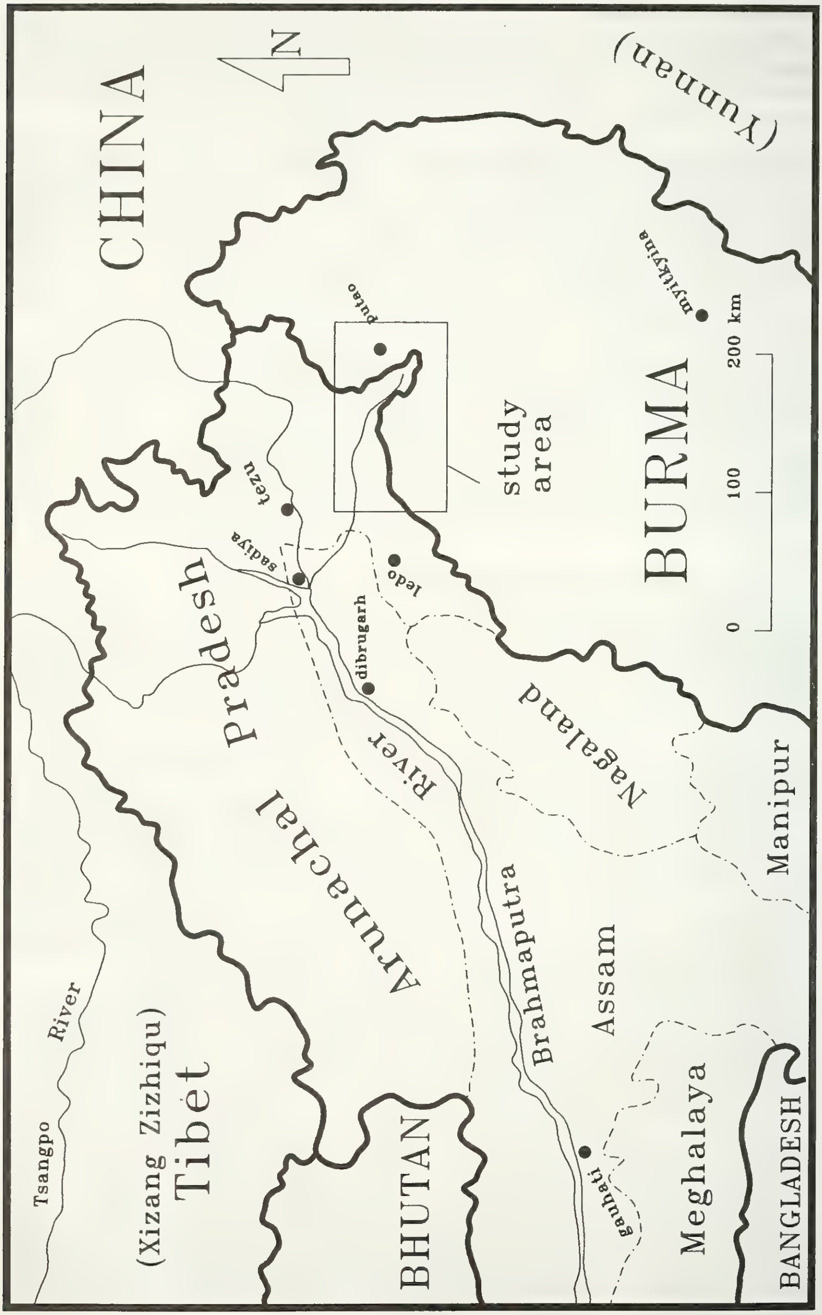
Holotype. U.S. National Museum No. 585852, adult male (testes small), collected at the Ridgetop (= Second Upper) Camp, 4 March 1988, 2500 m altitude, Noa Dihing River, Changlang District, Arunachal Pradesh, India (27°15′N, 96°52′E), by S. S. Saha, and prepared by Bruce M. Beehler and C. K. Misra; field number SDR 590.

Paratype. Z.S.I. field no. B7; adult male (testes small). Date and location of collection as for holotype.

Diagnosis. Differs from all other races of *S. troglodytoides* by the blackish crown and nape marked with a mixture of pale spotting and fine barring of grey-brown, forming a distinct cap that contrasts with the brown of the upper back. Unlike all other races, most nape feathers are distinctly barred with three or more dark bands. Finally, the upper surface of tail and exposed edges of secondaries and primaries are washed with dull brownish-grey rather than brown or rich brown.

S. t. sherriffi, of Bhutan, is most similar to this new population. *Indiraji* differs by the following additional characters: (1) pale spotting on crown and nape reduced; and (2) reduced pale spotting on mantle and back.

From *S. t. souliei*, of northeastern Burma, southeastern Tibet, and northwestern Yunnan, *indiraji* differs in: (1) the deep russet (not buff-tan) flanks; (2) grey-and-black (not buff-and-black) barred tail; (3) the distinct break between the blackish nape and the chestnut back; and (4) the darker, richer colours of the dorsal plumage. The race *rocki*, from Yunnan east of *souliei*, is even paler than *souliei* and quite distinct from the Noa Dihing birds. The nominate race, from Sichuan, lacks any of the chestnut colouration in the plumage, and also differs in that the crown, nape, and back are concolorous. In measurements our birds are not separable from any of the other races.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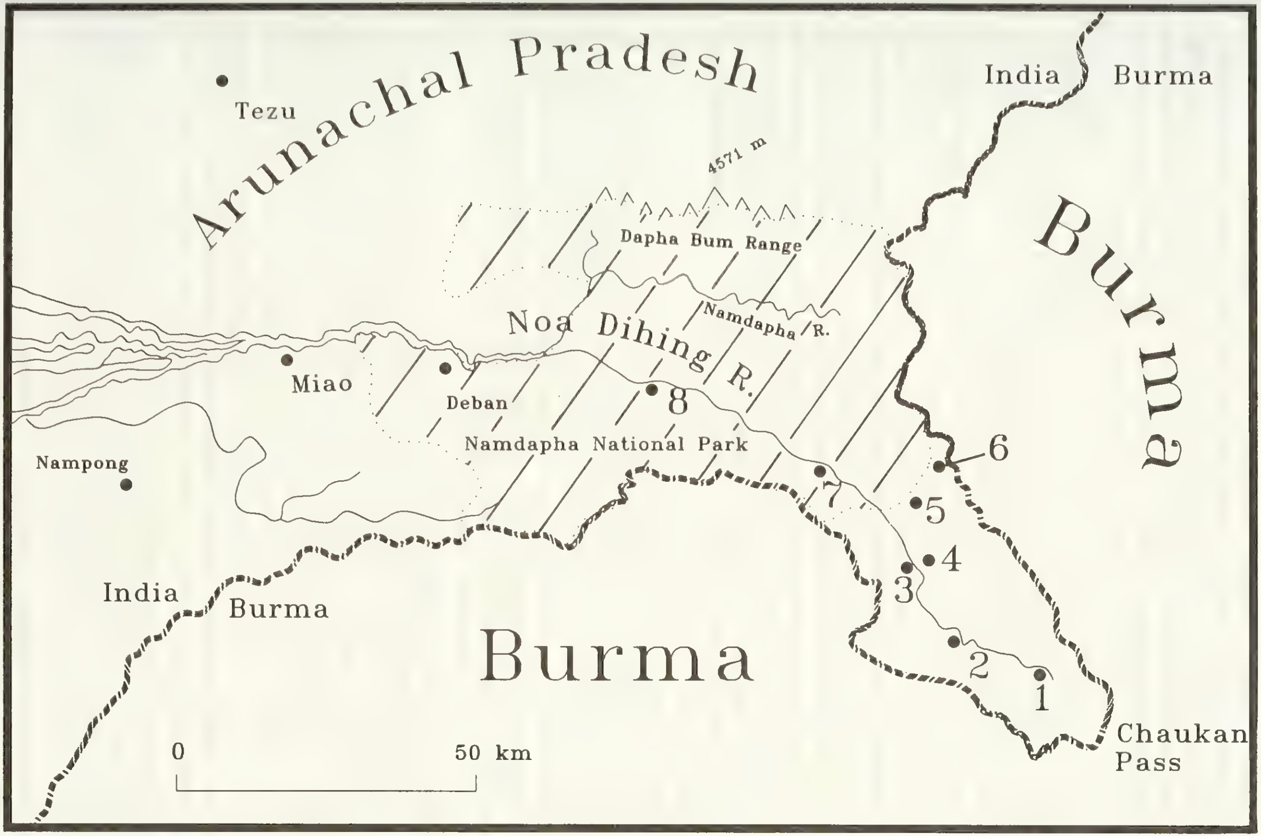
Arunachal Pradesh
Tezu
India
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4571 m
Dapha Bum Range
Namdapha R.
Noa Dihing R.
Burma
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Deban
8
Namdapha National Park
Nampong
6
7
5
4
3
2
1
India
Burma
Burma
Chaukan Pass
0
50 km

Figure 1. a (left). Map of northeastern India with study area in box. b (right). Map of upper Noa Dihing area, with numbered sites of study camps. 1, Vijaynagar; 2, Ramnagar; 3, Gandhigram; 4, Lone Camp; 5, Upper Camp; 6, Ridgetop Camp; 7, 77-mile Camp; 8, 40-mile Camp.

Measurements of the holotype. wing arc 51; wing chord 48.5; bill from skull 13.5; exposed culmen 9; tail 54; tarsus 21. Iris brown.

Distribution. Collected during the non-breeding season in the mountains on the northern side of the Noa Dihing River (locality 6 in Fig. 1b). It is known only from the type locality, but we presume it ranges through the mountains, above 2500 m, throughout the India/Burma border ranges from Nagaland to northernmost Arunachal Pradesh.

Specimens examined. (*souliei*): Yunnan, AMNH 573697, 573698; N. Burma, 307118, 307119, 307120; (*rocki*): Yunnan, USNM, 296784, 312284; (*indiraji*): Arunachal Pradesh, USNM 585852, ZSI field no. B7; (*troglodytoides*): Sichuan, USNM 321880, 33300; (*sherriffi*): eastern Bhutan, BMNH 11.16.34 (holotype), ZSI 38520.

Etymology. *Indiraji* is dedicated to the memory of our beloved friend and foremost member of the Delhi Birdwatching Society, the late Prime Minister of India, Smt. Indira Gandhi.

Remarks. Given the presence of *sherriffi* to the west, and *souliei* and *rocki* to the northeast, it is not surprising that a population of this species occurs in the border ranges. Furthermore, we would expect future researchers to find the bird in the easternmost Himalayas of western, central, and northwestern Arunachal Pradesh. As our birds were collected in a habitat that received significant snowfall in March, we suspect that the population is a high altitude breeder. It presumably inhabits only ranges that exceed 3000 m altitude.

WEDGE-BILLED WREN *Sphenocichla humei roberti*

This species, one of India's little-known birds, was last collected in 1905 (Stevens 1914). We collected a series of birds, which agree well with the race *roberti*. We netted 4 at the Upper Camp on 28 February 1988, and an additional 2 at Lone Camp on 6 March 1988. All were taken in thick undergrowth of regenerating forest. Efforts to find and observe free-ranging birds in the forest failed. Weights were as follows: male 37.2; female 31, 31.2; unsexed 29.2, 41, 43.

AUSTEN'S SPOTTED BABBLER *Stachyris oglei*

To our knowledge, this species has been collected only twice before our encounters: first in the Mishmi Hills above Sadiya by Godwin-Austen (Ali & Ripley 1987) and subsequently in the Patkai Range by Baker and Coltart (who received specimens from Naga tribal collectors; see Baker 1922). We mist-netted 7 specimens in the middle Noa Dihing (40-mile Camp, 12–24 March 1979). Although Coltart stated that the iris colour is crimson (see Ali & Ripley 1987), our birds had the following iris colours: brown, dull brownish red, and reddish brown. Iris colour was not readily correlated with age or sex. Weights: male 31, 32, 34, 36; female 28, 30, 31.

GREY-SIDED LAUGHING THRUSH *Garrulax caerulatus livingstoni*

Our specimens, taken at the Lone Camp on 27 and 28 February 1988, agree with the race *livingstoni* (Ripley 1952) collected in the Naga Hills, Cachar, and Manipur. This is a first record for Arunachal Pradesh.

BLUE-WINGED LAUGHING THRUSH *Garrulax squamatus*

Our series of six exhibits the plumage dimorphism mentioned by Baker (1922: 175). Examination of material at the American Museum confirms the general impression that the black-throated, black-tailed birds are usually males, and that the rufous-throated, brown-tailed individuals are nearly invariably females. Birds with intermediate plumage occur and can be of either sex. We have a single black-throated specimen that is labelled as female. There is some possibility that this is a product of mis-labelling, as three individuals of this species were collected and prepared together. It thus appears that the dimorphism is sex-related.

FIRE-TAILED MYZORNIS *Myzornis pyrrhoura*

We collected six at the Second Upper Camp, on 5 March 1988. These are the first records of the species south of the Brahmaputra River. The nearest Indian records are from Pachakshiri, more than 350 km to the northwest. The species has also been taken in western Yunnan (Cheng 1987).

THE *Alcippe vinipectus* **GROUP**

At least twenty distinct populations of small tit-babblers are subsumed in the *Alcippe vinipectus* group, traditionally broken into four species: *vinipectus*, *striaticollis*, *cinereiceps*, and *ruficapilla*. Based on new material collected in the Noa Dihing, we suggest a fifth species-level taxon (*ludlowi*), and note that the group exemplifies an explosive radiation of morphologically similar forms that would merit additional study. The species taxa can be readily distinguished as follows: (1) dark facial mask present = *vinipectus*; (2) no distinct markings on face or head = *ludlowi*; (3) mask absent, dark supercilium laterally enclosing reddish-brown crown distinct from colour of mantle and back = *ruficapilla*; (4) mask absent, dark supercilium of variable distinctness, crown much like mantle = *cinereiceps*; and (5) dark streaking on both crown and throat = *striaticollis*.

WHITE-BROWED TIT-BABBLER *Alcippe vinipectus perstriata*

We collected four from the Ridgetop (Second Upper) Camp, at 2500 m, 4 March 1988. These are the first specimens from eastern Arunachal Pradesh. We compared our material with specimens from Sikkim, Tibet (Chumbi Valley), northern Burma, western Burma and western Yunnan. Birds from Sikkim, Chumbi Valley and western Burma (Mt Victoria) all differ in having a brown (not black) mask. Ours agree closely with material from Yunnan (*bieti*) but for its reduced streaking on the throat. Specimens from northern Burma (*perstriata*) agree perfectly (see Stanford & Mayr 1941). This is a first record of *A. v. perstriata* from Indian territory.

BROWN-HEADED TIT-BABBLER *Alcippe ludlowi*

In 1934, Frank Ludlow collected specimens of a distinct *Alcippe* population in eastern Bhutan that was described by Norman Kinnear (1935) as a new species, *ludlowi*. It differed from all other known populations by the lack of any white or blackish patterning on the head or face and the rich reddish-brown nape, ear, and mantle. Deignan (1964) subsumed this population into *cinereiceps*, the nearest population being *manipurensis* from Nagaland and Manipur.

Although *ludlowi* and *manipurensis* originally could justifiably be considered geographic replacements and treated as subspecies, specimens we collected from the Ridgetop Camp in March 1988 indicate otherwise.

There we collected both *manipurensis* and *ludlowi* (as well as *A. vinipectus perstriata*). Although these specimens were taken in the non-breeding season, there is no published evidence of geographic movement of any *Alcippe* populations. These birds were collected high on an isolated massif and are presumably year-round resident isolates living in true sympatry.

This clear evidence of micro-sympatry requires us to consider *ludlowi* and *manipurensis* distinct biological species. We thus elevate *ludlowi* to species status. We have given this bird the name Brown-headed Tit-babbler to highlight the most prominent feature of this species.

Morphologically, *A. ludlowi* is undeniably distinct from all other populations in the genus *Alcippe*. It is the only taxon with the deep red-brown hood, and the only uniformly dark-headed form that totally lacks facial patterning or superciliary striping. Our material from the Ridgetop Camp is darker and richer-plumaged than available material from Bhutan (a specimen collected in 1934). Since this difference may be a product of foxing, we shall await further examination of more material before deciding whether the Noa Dihing population merits a new name.

GREY-HEADED TIT-BABBLER *Alcippe cinereiceps manipurensis*

Alcippe cinereiceps is a high altitude species that, as now defined, is distributed from Manipur, Nagaland, and eastern Arunachal Pradesh eastward to Burma, southern China, Taiwan, and Indochina. Our specimens generally agree with the subspecies *manipurensis*, known from Nagaland and Manipur eastward to Yunnan. We suggest this species be known as Grey-headed Tit-babbler, to distinguish it from the brown-headed *ludlowi*.

RUSTY-BELLIED SHORTWING *Brachypteryx hyperythra*

This is another northeastern Himalayan endemic that is rarely encountered. Two males were collected at 77-mile Camp by SSS on 31 January and 7 February 1987. A single female was mist-netted at the Ramnagar Camp on 15 February 1988 (weight 14.9). Cheng (1987) notes a single record from Yunnan (western Gongshan), the first from outside the Indian region. It should be looked for in northern Burma.

BLUE-FRONTED ROBIN *Cinclidium frontale orientale*

Previous Indian specimens came from Nepal, Sikkim, and Darjeeling. Our two males (40-mile Camp, 17 March 1979; Lone Camp, 28 February 1988) are apparently the first of this century for the Indian region (Ali 1962).

Remarkably, this species has long been known from two disjunct populations, one in the eastern Himalayas (nominate race), the other in Indochina (*orientale*, from Tonkin and Laos). Only recently has a Thai population been recorded, from Chieng Mai, Thailand (USNM specimen no. 535608, coll. B. King, 1965).

Our specimens agree with the material from Thailand and Tonkin (*orientale*). Nominate *frontale* differs in having a brownish wash on the abdomen, highlighted by "whitish on the centre abdomen and undertail coverts" (Baker 1924: 108). Thus *frontale* occurs west of the Brahmaputra River, and *orientale* to the east. All specimens examined (3 at USNM, 2 at

AMNH) have the concealed white patch under the bend of the wing, absent from the more common *Cinclidium leucurum* (also recorded from the Noa Dihing). Weights: 25.5, 29.

RED-HEADED TIT *Aegithalos concinnus manipurensis*

Our two specimens, collected in riverine scrub on 18 February 1988, are assignable to the population inhabiting the border ranges of the Brahmaputra (*manipurensis*) because of the rich rufous-buff of the breast. Birds from Sikkim and Nepal (*rubricapillus*) are paler ventrally. Specimens from Yunnan, Sichuan, and Tonkin (*talifuensis*) show a more prominent and better-delineated white patch on the abdomen.

CHESTNUT BUNTING *Emberiza rutila*

Our male (Ridgetop Camp, 7 March 1988) is a first record for Arunachal Pradesh of this winter migrant from Siberia and Manchuria. There is only a handful of records of this species from the Indian region (Ali & Ripley 1987). Weight: 18.8.

Acknowledgements

We thank F. Berkowitz and the Smithsonian Special Foreign Currency Fund for support of this field work. We were able to conduct field research in Arunachal Pradesh through kind permission of the Government of India, Department of Environment. Valuable assistance was provided by the Zoological Survey of India, Bombay Natural History Society, the American Embassy in Delhi, and the following individuals: Sálim Ali, V. C. Agrawal, Tape Bagra, C. K. Misra, G. Noroian, B. Roy, K. R. Subramaniam and D. E. Wilson.

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New distributional information on the *Aphelocoma* jays

by A. Townsend Peterson

Received 16 July 1990

Thorough knowledge of patterns of distribution is crucial to understanding the ecology and historical biogeography of species (Mayr 1963). For example, in certain situations, the existence of peripheral isolate populations can lend support to hypotheses of relictual distribution (e.g. Fitzpatrick & O'Neill 1979). Discovery of populations inhabiting unusual habitats can change interpretations of ecological restriction and historical biogeography (e.g. Peterson & Vargas, in press). Thus, documentation of range extensions, especially those providing new information on the range of habitats that a species can utilize, is important.

Pitelka (1951, 1961) summarized the distribution and ecology of the three species of *Aphelocoma* jays. His work, based on virtually all of the specimens in North American museums (4817 in total) and a thorough review of the literature, revealed many interesting geographic patterns. Nevertheless, specimens and other information were insufficient to allow a thorough understanding of the distribution and geographic variation of the jays in several areas. Because the behaviour, ecology, and evolution of the *Aphelocoma* jays is of intense interest (e.g. Woolfenden & Fitzpatrick 1984, Brown & Horvath 1989), accurate information on distribution and ecology of the group is especially important.

This paper is intended to provide new information on the distribution and ecology of the three species of *Aphelocoma* jays. This information has been amassed during extensive field work in the United States and Mexico during 1986–89, discussions with other scientists, and reviews of most major museum collections in the United States and Mexico. Several range extensions are described, and the taxonomic implications of the two most significant are discussed.

Results

Below is a summary of new distributional information for each of the three species, listed in north-to-south order. Several new records were discussed by Pitelka (1961), including important new specimens of *A. ultramarina* from central Mexico. Abbreviations for museums are as follows: CAS: California Academy of Sciences; FMNH: Field Museum of Natural History, Chicago; LACM: Los Angeles County Museum of Natural History; MZFC: Museo de Zoología, Facultad de Ciencias, Universidad Nacional Autónoma de Mexico; SBCoMNH: San Bernardino County Museum of Natural History, California; and MLVZ: Moore Laboratory of Vertebrate Zoology, Occidental College, California.

SCRUB JAY *A. coerulescens*

Idaho—ranges N to Bannock Co., Pocatello, Scout Mountain, in open juniper-pine woodland (P. E. Lowther, pers. comm.).

Wyoming—range in southern part of state more extensive, with the jays living in open juniper-Mountain Mahogany (*Cerocarpus montanus*) woodland N to central Sweetwater County in the southwest part of the state (Fitton & Scott 1984).

Texas—range more extensive in central part of state (subspecies *texana*), reaching W to between Ozona and Sonora and to between Big Lake and Mertzon, N to just S of Abilene, and E to Bexar Co. and Austin (Dixon 1952, B. Burt, pers. comm.).

California/Arizona—fall and winter records from along the lower Colorado River basin and S of the Salton Sea are now much more numerous, with several specimens (SBCoMNH 36420, LACM 46037), and numerous sight records reported in the past decade in *American Birds*. The apparent increase is most likely due to the presence of more observers in the area. A detailed analysis of the source populations for these individuals is in progress (Peterson, unpubl.).

Mexico, Coahuila—sight records extend the range of the species about 160 km N to the mountains W of Santa Teresa, in the vicinity of Monclova (Fig. 1, A; A. Garza de León, pers. comm). However, a definite gap of about 420 km remains in the species' distribution between this site and the populations of western Texas (Pitelka 1951, Miller 1955).

Sierra Madre Occidental—extensive new series of specimens and sight records (Miller *et al.* 1957, Peterson, unpubl. data) extend the range of the species S along the full extent of the Sierra Madre Occidental through Durango, Zacatecas (Fig. 1, B) and northeastern Jalisco (Fig. 1, C). Localities include the following: Zacatecas, in the vicinity of Sombrerete (CAS 61718, 61862-3, 62799, FMNH 343462-6), and in the vicinity of Valparaiso (pers. obs.); and Jalisco, in the vicinity of Lagos de Moreno (FMNH 343452-61), at various sites along the road from Lagos de Moreno N to El Puesto, and 2 km N of El Mosco. In contrast to the usual pattern of habitat use (pinyon or oak woodland), the Jaliscan records were in riparian woodlands of a leguminous tree called "pirul", while in Zacatecas, the jays were in low open juniper woodland or very open pinyon-juniper woodland (Peterson & Vargas, in press). Subspecific relationships of these populations are discussed below. A record from Nayarit, 15 mi NW of Lagos (CAS 62800), appears to be erroneous, perhaps actually from Lagos de Moreno, Jalisco, as neither the locality nor other records of the species exist in Nayarit (Escalante 1988, pers. obs.).

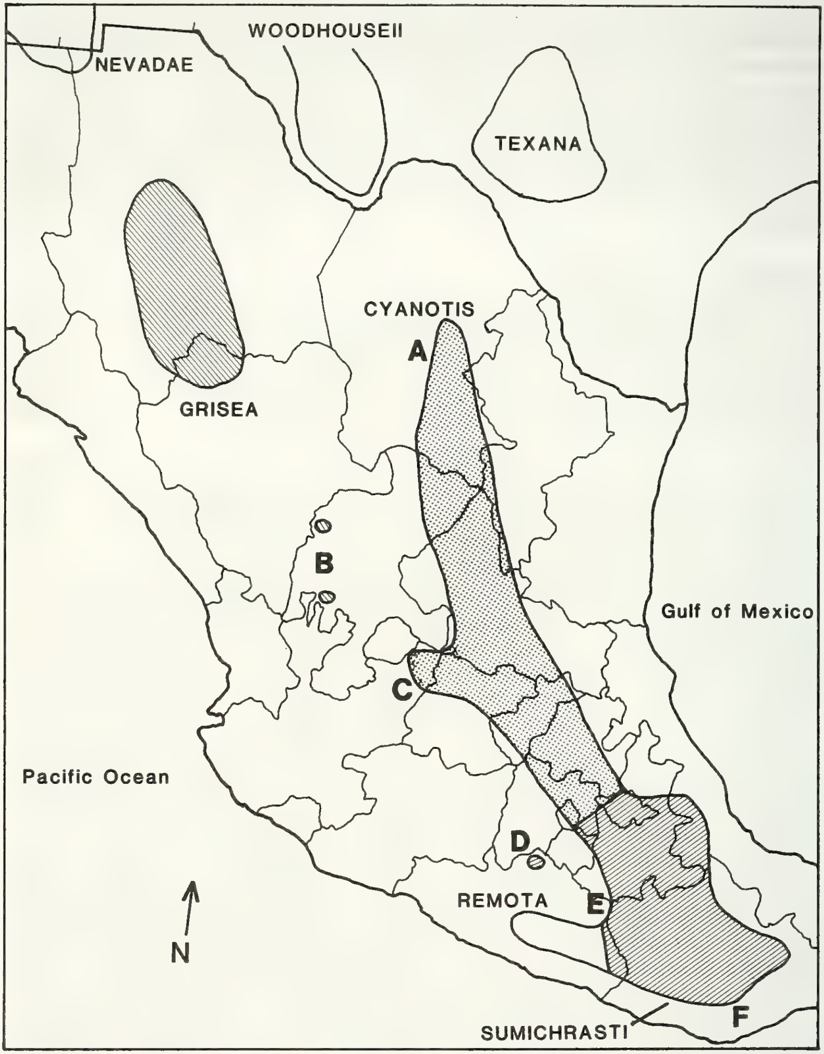
WOODHOUSEII
NEVADAE
TEXANA
GRISEA
CYANOTIS
A
B
C
Gulf of Mexico
Pacific Ocean
D
REMOTA
E
N
F
SUMICHRASTI

Figure 1. Distribution of Scrub Jays in Mexico. Indicated by letters are new range extensions, north to south, in (A) Coahuila, (B) Sierra Madre Occidental, (C) Jalisco and Guanajuato, (D) Guerrero, (E) Puebla and (F) Oaxaca.

Guanajuato—several specimens now exist from 2–9 km W of Dolores Hidalgo (Fig. 1, C; various specimens in MLVZ). Although no habitat data on these populations are available, these localities lie in open desert with occasional patches of shrubland or riparian woodland (pers. obs.). Subspecific relationships of these populations are discussed below.

Guerrero—three specimens were obtained from the Sierra de Taxco, 5 km N of Taxco, on 30 Dec 1988 in pine-oak woodland, representing the first record of the species from northern Guerrero or from the southern Neovolcanic Belt (Fig. 1, D; Morales Perez 1989). Subspecific relationships of these populations are discussed below.

Puebla—in the southernmost part of the state, 7 km W of Las Sidras, at least three territorial pairs of jays were observed in desert scrub/riparian woodland, filling in a gap in the species' range (Fig. 1, E) and providing an interesting new ecological situation for the species in southern Mexico.

Oaxaca—range extends farther S to the interior slope of the Sierra de Miahuatlán, 10–20 km S of Sola de Vega (Fig. 1, F).

GRAY-BREASTED JAY *A. ultramarina*

Guerrero—recorded from the Sierra de Taxco (Morales Perez 1989, pers. obs.), constituting a southward range extension of about 50 km, and the first record of the species for the state of Guerrero.

UNICOLORED JAY *A. unicolor*

Sierra Madre Oriental—Four specimens (FMNH 343729, three in MZFC uncatalogued) from 5 km E of Tlanchinol, in northeastern Hidalgo, and sight records from Tenango de Dorio, in southeastern Hidalgo (Jerram Brown, pers. comm.), extend the species' range about 150 km NW to near the northeastern limit of true cloud forest habitats in Mexico. These specimens are similar in morphology and colouration to specimens taken in central Veracruz, and are only moderately genetically differentiated from populations in the Zempoaltépetl region of Oaxaca (i.e. frequency differences only; Peterson, in prep.). The status of *unicolor* in Veracruz and Puebla is very uncertain, with few records since a 1948 specimen and a 1985 sight record from near Teziutlán, Puebla (FMNH 187300; T. Davis, pers. comm.). Extensive searching on the slopes of Cofre de Perote above Xico (vicinities of Ticuahutipan, Xico Viejo, Teocelo), Veracruz, in June 1985–June 1986 and January 1989 (A. G. Navarro S., pers. comm.; pers. obs.) yielded neither sightings of this species nor extensive appropriate habitat.

Guerrero—range extends farther W and S into the vicinity of the Sierra de Atoyac, El Iris (specimens: FMNH 343590-3, MZFC 4021-3), but earlier records from Mount Teotepec (Miller *et al.* 1957) may refer to this area, instead of the higher-elevation Mount Teotepec proper (A. G. Navarro S., pers. comm.). In spite of statements to the contrary by Phillips (1986), *unicolor* is still present and common at the type locality of the subspecies *guerrerensis,* Omiltemi.

Jalisco—a sight record from the Sierra de Manantlán, above El Grullo (Beals & Rusterholz 1981), is apparently erroneous, given extensive field observation and collecting in the area concerned (pers. obs.).

Discussion

In order to understand the implications of these new populations of *Aphelocoma* jays for the overall picture of geographic variation in the genus, I made comparisons with existing series of specimens in the Field Museum of Natural History and the Moore Laboratory of Vertebrate Zoology. No geographic variation was evident in the newly discovered populations reported here for *A. unicolor* or the United States populations of *A. coerulescens*, and no specimens were available from the new population of *A. ultramarina*. Hence, below, I discuss the implications of range extensions of *A. coerulescens* in southern Mexico for the pattern of geographic variation in the species. The comparisons were made using series of fully adult individuals (after second year; Pitelka 1945) from the following localities: Guerrero, Cuapongo (4); Guerrero, Sierra de Taxco (2); Oaxaca, Mitla (10); Oaxaca, Llano Verde (2); Durango, Ojito (4); Zacatecas, Sombrerete (2); Jalisco, Lagos de Moreno (6); and various localities in San Luis Potosí (7).

Contrary to the statements of Binford (1989), the subspecies *remota* of central Guerrero is relatively well marked and distinct from *sumichrasti*, which extends from the Federal District and Tlaxcala south to Oaxaca. Three characters serve to identify most individuals as one or the other. (1) The pileum is lighter blue in *remota* than in *sumichrasti*. (2) The back is lighter brown in *remota* than in *sumichrasti*, but contra Pitelka (1951), I found individuals of both subspecies with blue suffusion in the brown of the back. (3) The collar of *remota* is considerably less extensive, and the brown underwash of the collar of *sumichrasti* is lacking.

The Taxco specimens appear to be much more similar to *sumichrasti* than *remota*. Although the collar and upper breast of the Taxco birds are slightly lighter than in *sumichrasti*, they are considerably darker than in remota. The blue of the pileum and the brown of the back in the Taxco birds are both darker than in *remota*, closely matching *sumichrasti*. Thus, the southern populations of *A. coerulescens* can be interpreted as nearly continuous from the Transvolcanic Belt south to the Sierra Madre del Sur, from Oaxaca, Puebla, and Veracruz west at least to Guerrero. The central Guerrero form, *remota*, appears to be isolated from populations to the north by the arid lowlands of the Balsas Depression and possibly intergrades with *sumichrasti* along the Guerrero-Oaxaca border (Binford 1989).

Acknowledgements

Many thanks to my numerous field companions, especially A. Peterson, S. Baker, H. Benítez D. and N. Vargas B. Thanks also to J. Brown, B. Burt, T. Davis, P. Escalante, A. Garza de León, S. Howell, P. Lowther and A. Navarro S. for information on jay distribution and to the curators of the collections listed above for access to materials. Special thanks to F. Pitelka for providing extensive unpublished data. Funding was provided by the National Science Foundation, National Geographic Society, Sigma Xi, the Chapman Fund of the American Museum of Natural History, Field Museum of Natural History and the University of Chicago.

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Observations on nesting and nestling growth in the Rusty-margined Flycatcher *Myiozetetes cayanensis* in southeastern Peru

by Andrzej Dyrcz

Received 5 July 1990

Information on the breeding biology of the Rusty-margined Flycatcher is scarce (Haverschmidt 1971). Below I give some new data.

In November and December 1985 I observed Rusty-margined Flycatchers which nested at an oxbow lake (Laguna Chica) in lowland rain forest in Tambopata Reserve, Puerto Maldonado, southeastern Peru. The species was first found there in 1978 (Parker 1982). Two nests were found at the edge of the oxbow. They were situated on small bushes growing in the water, and were 100 and 140 cm above water level. They had a more or less oval shape with a well-formed roof over the top. The

TABLE 1
Growth parameters of a Rusty-margined Flycatcher nestling

Age, days	Weight (g)	Body length (mm)	Tarsus length (mm)	Wing length (mm)	Bill length (mm)	Length of 9th primary (mm)	Length of 2nd tail feather (mm)
2	3.5	40	7.6	—	—	0	0
3	5.0	41	9.7	9.4	4.9	0	0
4	6.5	48	9.9	11.3	5.8	0	0
5	8.5	52	10.4	11.6	7.0	0.4	0.3
6	10.0	59	12.3	14.6	7.8	1.1	1.5
7	12.5	61	14.0	16.8	8.5	3.8	1.8
8	14.5	66	15.2	17.1	8.7	8.9	3.8
9	15.5	75	15.9	20.0	9.9	10.6	3.8
10	18.5	79	16.9	21.4	10.2	15.0	5.6
11	19.0	83	18.6	22.4	10.9	18.7	11.6
12	21.5	88	20.5	23.0	11.2	23.9	11.8
13	21.5	94	21.2	23.3	11.4	28.0	13.6
14	24.0	98	21.4	24.2	11.9	32.8	15.5
15	24.0	100	21.6	25.0	13.0	36.3	17.5
16	24.0	101	22.0	25.5	13.5	39.1	21.2
17	25.5	102	22.2	25.5	13.9	41.1	23.5
18	25.0	102	22.5	25.5	13.9	44.6	26.5
19	24.5	104	22.5	25.5	14.0	47.8	30.4
20	25.5	104	22.5	25.5	14.0	47.8	38.6

outer wall was constructed of coarse grasses, small twigs, lichens and other material, the inner chamber of fine grasses and pappus of unidentified seeds. The diameter of the side entrance of one nest was 4 cm and the diameter of its chamber was 9 cm. The weight of the dry nest was 54 g.

In the first nest the first egg was laid between 9 and 11 November. The clutch was two eggs (21.4 × 16.6 mm, 20.3 × 15.7 mm). The weights of the fresh eggs were 3.25 and 2.75 g. The smaller egg did not contain any visible embryo. The single nestling hatched on 26 November, and was measured and weighed every day between 15.00 and 16.00 hrs up to the 19th day of life. The length of the body was measured from the tip of the bill to the end of the pygostyle. The flattened chord length of the wing was measured; the tarsus was measured from bend to bend, and the bill from skull to tip. All the measurements were taken to the nearest 0.1 mm (except body length to the nearest 1 mm), and the weight to the nearest 0.5 g. The data are presented in Table 1.

The colour of the skin at 2 days old was yellowish-orange and in the following days became darker; the upperparts were covered by a yellowish-white down. Primaries and tail feathers became visible on the 5th day of life, the eyes opened on the 6th day, and the vanes of contour feathers started to appear on the 13th day. On the 18th day of life the nestling was completely covered by feathers. It left the nest when 21 days old. I visited the nest again on 29 December, and saw the colour-ringed, 34-day-old young in its vicinity. Generally, it looked like an adult bird, except that the yellow underparts were paler. During one hour of observation it begged three times in vain; the adults were mildly aggressive to it. Eventually it flew to the other side of the oxbow.

In the second nest, the first egg was laid on 28 November. Altogether, three eggs were laid (23.6 × 16.8, 23.2 × 16.7, 22.6 × 17.2 mm); one per day. This differs from Haverschmidt's (1971) observation that the eggs are laid on alternate days. Three days after completion of the clutch the eggs disappeared. Later a new nest was constructed 15 m away, probably with material from the old one which had disappeared. Soon the water level in the river nearby rose unusually high, the whole region was flooded and observations ended.

The growth curve of the Rusty-margined Flycatcher nestling weight differs from those of some other species studied in the neotropics (e.g. Dyrcz 1983, 1984). The growth was slow and at the end of the nestling period there were marked fluctuations in growth rate. The maximum weight was reached on the 17th day of life. When it left the nest the fledgling weighed about 85% of adult weight.

For purposes of comparison of growth rates between species, irrespective of body size, it is convenient to use the growth rate constant K, derived from the curve of the logistic equation to which observed growth rates of birds approximate (Ricklefs 1967, 1976). Ricklefs' method, applied to the nestling under observation, gives a growth rate constant of 0.353. This is lower (i.e. growth was somewhat slower) than the values given by Ricklefs (1976) for four Rusty-margined Flycatcher nestlings from Panama, which range from 0.370 to 0.414. The values for this species are close to the average for 40 neotropical passerine species (0.365; range 0.126–0.604) reported by Ricklefs (1976) and Oniki & Ricklefs (1981).

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On the races of *Anthus caffer* Sundevall, 1850, occurring in eastern Africa

by P. A. Clancey

Received 31 July 1990

The Little Tawny or Bushveld Pipit *Anthus caffer* Sundevall, 1850: Rustenburg, western Transvaal, is a localized and highly vicariant member of a triad of diminutive Afrotropical pipits which inhabits lightly bushed savanna grasslands, and is in the main known from the eastern interior plateau of the continent, but reaches the littoral in the southeast of its range. The other members of the triad are the Short-tailed Pipit *Anthus brachyurus* Sundevall, 1850, and the Sokoke Pipit *Anthus sokokensis* van Someren, 1921. The subspeciation of *A. caffer* has recently been discussed in part in Clancey (1989) and more fully in Clancey (1990) and Aspinwall (1990).

In their *Birds of East Africa*, Britton *et al.* (1980) recognize *A. c. blayneyi* van Someren, 1919: Olgerei, Kenya, as the sole racial representative of the species in eastern Africa, which is stated as occurring from Lolgorien, the Mara R., Loita, Ngong, Konza and Simba, in Kenya, to Serengeti, Arusha, Kidugallo and Dar es Salaam, in Tanzania. They also comment that the few records from south of *c.* 5°S are for the months of September and October, and are indicative of either post-breeding nomadism or the existence of regular migratory movements. That populations of other subspecies—such as nominate *A. caffer* and *A. c. mzimbaensis* Benson, 1955: Mzimba, Malawi—are local short-distance migrants is confirmed in Clancey (1989, 1990).

During a study of the relatively limited material of *A. caffer* in the British Museum (Nat. Hist.), Tring, in 1983 I located a specimen sexed as a male, but clearly a female on measurements, obtained at Lomorn, 29 km SW of Loliondo, Tanzania (2°03′S, 35°40′E), by E. Rowe on 12 September 1935 (B.M.Reg.1945.41.127), at an altitude of 1830 m a.s.l., which differed markedly from the available specimens of *A. c. blayneyi* and *A. c. australoabyssinicus* Benson, 1942: Yavello, southern Ethiopia, at 1372 m. Data from the label record that the bird was collected in sparse thornbush on an isolated rocky hill in otherwise short grass pasture country, the gonads being described as quiescent. Compared with both *A. c. blayneyi* and *A. c. australoabyssinicus* the Lomorn specimen differs in having the upperparts much darker and colder in colour, lacking entirely the warm tawny nuance of the two said races, the shaft-streaking Fuscous rather than Sepia (Ridgway 1912), the edgings of the feathers from the pileum to the lower back Cinnamon-Buff *versus* Buckthorn Brown. The rump is also darker, being greyish olivaceous with the feather centres broadly dull black. On the face, the ear-coverts are again dark, lacking any trace of tawny. Ventrally, the entire ground is dull white, the breast with much broader and blacker streaking than in the case of the two taxa with which it is here compared. The flanks are also more broadly marked with black shaft-streaking, and the wings and tail are likewise darker. The flattened wing measures 66.5 mm, the culmen from the skull 12.5 mm, and the tail 42.5 mm. Both of the tarsi are broken.

As the material at Tring did not permit of a subspecific determination of this contentious specimen, I had it sent out in June 1990 to the Durban Museum, where I was able to match it relatively closely with paratypical material of *A. c. traylori* Clancey, 1964: Bela Vista, Sul do Save, southern Mozambique, of the southeastern African littoral to the south of the Save R., from which it differed in being still darker over the dorsal surfaces from the crown to the lower back and in being smaller. In *traylori* the mean of the wing-length in ♀♀ is 70.4 mm, s.d. 1.13 ($n=11$) and that of tail-length 47.5 mm, s.d. 0.82 ($n=8$). The state of the gonads, the colour criteria and small proportions suggest that the Lomorn specimen was a migrant or nomad from breeding grounds probably situated in the East African coastlands somewhere to the north of the established range of *traylori*. The records cited by Britton *et al.* from Kidugallo (6°47′S, 38°12′E) and Dar es Salaam (6°48′S, 39°17′E) may indicate where they are to be found. The specimen concerned appears to represent an undescribed form which will require to be named when additional specimen material comes to hand. Until this is realized, I recommend that the Lomorn bird be tentatively attributed to *A. c. traylori*.

Schmidl (1982), in his list of the birds of the Serengeti National Park, Tanzania, lists *A. caffer* on the basis of four May–October records, the question of their subspecific allocation not being dealt with.

In my 1990 revision of Afrotropical *Anthus* spp. I queried the status of *A. c. australoabyssinicus*. Benson (1942) differentiated this southern Ethiopian population from the Kenyan *A. c. blayneyi* on a single character, namely the extent to which the forethroat was streaked, *blayneyi* reputedly having a whiter throat than the Ethiopian form. Benson's paratypical material of the latter, now in the collection at Tring, compared with the limited Kenyan sample of *blayneyi* did not confirm that the form warranted recognition. In June 1990 I had an adult ♂ specimen of *australoabyssinicus* from 48.3 km S of Yavello, southern Ethiopia, sent out to the Durban Museum for examination, careful study of which shows no extension of the pectoral streaking up over the forethroat but reveals that the somewhat extended neck of the skin gives the impression that this is so. This impression is effected by the exposure of the greyish basal feather surfaces through elongation of the neck skin during preparation. From this finding it can be deduced that the single character given for *australoabyssinicus* is an artefect resulting from differences in style of skin make, and that the form concerned is synonymous with *A. c. blayneyi*.

As a result of the above findings, the populations of *A. caffer* occurring in eastern Africa from southern Ethiopia to Kenya and Tanzania may be grouped in two subspecies: *A. c. blayneyi* (with *A. c. australoabyssinicus* treated as a synonym) and *A. c. traylori*, the placing of the latter tentative.

Acknowledgements

For access to the collection at the British Museum (Nat. Hist.), Tring, I am grateful to the responsible officials, and to Mr P. R. Colston of the staff I am indebted for the loan of the limited Tring material studied in Durban in 1990.

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Distribution and subspeciation of the Biscutate Swift *Streptoprocne biscutata*

by Helmut Sick

Received 12 July 1990

The Biscutate Swift, collected by J. Natterer in southeastern Brazil, was described by P. L. Sclater as *Chaetura biscutata*, following Natterer's suggestion in his MS not to consider it as merely a variety of *C. zonaris* (Shaw). The topotypical material came from 'Rio de Janeiro and Ypanema', the latter now situated within the city of São Paulo at 23°33′S, 46°38′W. The species occurs sporadically in eastern Brazil, extending to Misiones, Argentina. Until recently it has been considered uncommon; there are few specimens in collections. Thus it came as a great surprise to learn in 1973 that in northeastern Brazil the Biscutate Swift gathers in very big flocks, and that for centuries their droppings, collected from the cave where they roost, have been used as a fertilizer (Sick 1985).

The swifts come to a certain area in Rio Grande do Norte (Seridó) as migrants, between February and October, corresponding to the southern winter. In August 1986 we estimated 8–10,000 and in 1987 90–100,000 individuals entering the cave. There is no evidence of their breeding in northeastern Brazil. The people of Rio Grande do Norte believe they come from Africa or from Peru. A similar legend is told about the Eared Dove *Zenaida auriculata*—with more reason in the case of the doves, which are sometimes found dead on the beaches of northeastern Brazil, as there is a large population of them on the island of Fernando de Noronha, 356 km off the coast, and during movements between the island and continent losses may occur.

In 1984 G. Mattos, M. A. Andrade and M. V. Freitas (Andrade *et al.* 1986) found the first (and still the only) breeding place known of the Biscutate Swift: a colony situated in the Ibitipoca Mts in Minais Gerais, southeastern Brazil. The breeding season there is from October to the end of the year, the southern summer. The swifts arrive in Ibitipoca as early as August and stay there until February. There were estimated to be about 1200 individuals distributed over 15 caves, each cave harbouring a separate colony; ringed individuals returned in successive years.

At first, this appeared to be a very satisfactory solution to the riddle of the Biscutates from Seridó; but then we realized that the birds from Minais Gerais (and other places in southeastern Brazil) are bigger than the Seridó swifts. It is now clear that there are two different populations of the Biscutate Swift: a larger form in the south, nesting e.g. in Minais Gerais, and a smaller one, 'wintering' in northeastern Brazil, which we here describe as a new geographical race:

Streptoprocne biscutata seridoensis subsp. nov.

Type. ♂, Serra do Bico da Arara, Acarí district, Seridó region, Rio Grande do Norte, Brazil (6°31′S, 36°38′W), altitude 600 m. Collected 5 August 1987 by G. Mattos, M. A. Andrade and M. V. Freitas. Deposited in the Museu Nacional, Rio de Janeiro, no. 36.897.

Measurements. Type: wing (flat) 187; tail 66 (a little abraded); tarsus 23; exposed culmen 9; total length 193 mm; weight 85 g. See also Table 1.

Plumage. Black, wings more sooty black. Feather shafts on back and rump brilliant. Collar on hindneck and pectoral patch white. Lores clear brown. Chin and upper throat whitish; feather shafts sooty brown. Male and female similar.

Diagnosis. Differs from *S. b. biscutata* by its smaller size. Wing measurements of the two races do not overlap. There is a wider range of tail measurements of *seridoensis* specimens in both sexes, but the mean values are lower in *seridoensis* (Table 1). The weights of *seridoensis* are mostly under 100 g (78 birds captured for ringing, August), those of *biscutata* more than 100 g (165 birds captured for ringing, Ibitipoca (21°42′S, 43°53′W, 1200–1700 m), August and January). The difference of size is also apparent from the smaller legs and feet of *seridoensis* individuals, which can be fitted with a smaller ring than *biscutata*.

Range. Known only from Rio Grande do Norte and Piauí, northeastern Brazil, as a migrant.

Etymology. From Seridó, a famous geographical name. It was in use as early as about 1679 (Lamartine 1980), together with Acarí, a small town at the base of the Serra do Bico da Arara ('macaw-bill mountains'), where the swift cave is located.

Ecology. Biscutate Swifts are associated with dry caves, unlike the White-collared Swift *S. zonaris*, which nests on wet cliffs, often behind waterfalls. These two large swifts can occur in the same area, as in the upper Itatiaia Mts, Rio de janeiro, above the forested area around the bare mountains at c. 2500 m; but they do not associate.

TABLE 1
Wing- and tail-length (mm) in the Biscutate Swift *Streptoprocne biscutata*

		WING			TAIL		
Sex	N	Range	Mean	S.D.	Range	Mean	S.D.
S. b. biscutata							
♂	6	200–211	206.8	4.07	64–70	67.3	2.33
♀	5	198–210	206.0	5.05	64–69	65.8	1.92
S. b. seridoensis							
♂	8	185–196	188.6	3.78	53–74	62.4	7.40
♀	15	172–193	182.8	6.59	53–72	59.8	5.88

Note. Specimens of *S. b. biscutata* from Ibitipoca (4) and Mariana (1, unsexed, wing 203, omitted from table), Minas Gerais; Teresópolis, Rio de Janeiro (1); Itararé, S. Paulo (1); Umbará (4) and F. Alegre (1), Paraná. Specimens of *S. b. seridoensis* from Seridó, Rio Grande do Norte (17); Paranaguá (3) and Caracol (3), Piauí.

Additional remarks. The Biscutate Swift is one more example from South America of the tendency for populations near the equator to be smaller in size than those at higher latitudes; other examples are known in, e.g., the Psittacidae (*Pionus maximiliani* and *Amazona vinacea*), Caprimulgidae (*Podager nacunda*, *Nyctidromus albicollis* and *Hydropsalis brasiliana*), Tyrannidae (*Onychorhynchus coronatus*), Thraupinae (*Euphonia chlorotica*), Emberizinae (*Oryzoborus angolensis*) and Cardinalinae (*Pitylus*). Such geographical variation warrants recognition in the nomenclature. We are still ignorant of the breeding range of the small Seridó swifts; perhaps it is in the region of the middle Rio São Francisco, Bahia. The large numbers occurring in Seridó suggest that birds from several colonies meet there during the non-breeding season.

Acknowledgements

I am obliged to H. Schifter, Vienna, who informed me about the specimens collected by J. Natterer and O. Reiser, and to L. P. Gonzaga, who located specimens in the Museu Paraense Emilio Goeldi, Belém, and the Museu de Zoologia, São Paulo.

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The nomenclatural status of *Trogon leverianus* Shaw, 1792, and *Trogon sallaei* Bonaparte, 1856

by M. Ralph Browning, Christian Erard & Herbert Schifter

Received 7 August 1990

The nomenclature in New World Trogonidae experienced considerable controversy until the middle of this century. Although most issues had by then been resolved, two remain to be clarified. First, the status of the name *Trogon leverianus* Shaw, 1792, suggested by Zimmer (1948) to be either a junior synonym of one species or an earlier name of a different species, remains unresolved. Second, the name *Trogon sallaei* Bonaparte, 1856, was rejected by many authors who failed to realize its identity on the basis of the original description and to recognize the then extant female syntype as a name-bearing type. The nomenclatural status of these names follows.

Trogon leverianus Shaw, 1792

Shaw (1792: 175–178) described the belly of *Trogon leverianus* as white with an "extremely slight tinge of reddish or buff." The plate (opposite p. 177) accompanying the description is of an adult male with the visible portion of the underparts white and the black wing coverts slightly speckled with white. Latham (1802) repeated Shaw's (1792) description but Stephens' (1815) continuation of Shaw's General Zoology did not mention *leverianus*.

Pelzeln (1871) synonymized *leverianus* with *Trogon viridis* Linnaeus, 1766 (= *T. strigilatus* Linnaeus, 1766, of Peters [1945] but see Zimmer [1948]). Pelzeln (1873: 19) reported the holotype of *leverianus* as no. 4785 and as no. 130 in his list of species, and stated that the "abdomen has changed from yellow to white, probably by the influence of light." Zimmer (1948) did not mention the colours "reddish" or "buff" of Shaw's (1792) description and stated, apparently in reference to Pelzeln (1873), that the "underparts were described as white." He also stated that "Shaw's original plate, however, shows a male bird with vermiculated [= speckled] wing-coverts, which are at total variance with the condition in *viridis*, though in agreement with the characters of *Trogon surrucura* [Vieillot 1871]." However, a colour photograph of the original plate (in the McGill University library) shows that the wing coverts are shiny black without white speckling.

Shaw's specimen of *Trogon leverianus* was among 200 specimens of the Lever collection purchased by Leopold von Fichtel for the Imperial Court Cabinet in Vienna (Stresemann 1975), and was the only trogon reported by Pelzeln (1871, 1873) to have been received from the Museum Leverianum. The specimen was listed in Donovon's (1806) sale catalogue as no. 4785 "Leverian trogon, Trogon leverianus, extremely fine and rare." It was received by the Naturhistorisches Museum Wien in 1806 as a mounted bird where it is now 55.046 as a study specimen. On its oldest label is the museum's original acquisition number 1806.111.60, the number "130" and the words "Trogon viridis Linne (=Tr. leverianus)" and "Mus. Leverianum."

The underparts of the holotype of *Trogon leverianus* are white and the wing coverts are entirely black. The specimen is clearly an example of *Trogon viridis*. It cannot be identified positively to subspecies, but on the basis of the only specific locality, "Cayenne" (Shaw 1792), the name *leverianus* is best regarded as a synonym of nominate *Trogon viridis*.

Trogon sallaei Bonaparte, 1856

Bonaparte (1856: 955) proposed the name *Trogon sallaei* for a new species of trogon, and described both the male and female plumages from specimens collected by Auguste Sallé in the vicinity of Cordoba, Veracruz, and Mt Orizaba, Puebla, Mexico. In a separate catalogue of Sallé's collection, Sclater (1857) listed one specimen as *T. aurantiiventris* Gould, 1856, an orange-breasted species from Costa Rica and Panama, and listed *T. sallaei* as a synonym of *aurantiiventris*. This synonymy was followed by Ogilvie-Grant (1892), and thus the name *sallaei*, although based on yellow-breasted birds from Mexico, was long associated with an orange-breasted species not known to occur there. The name *T. braccatus* Cabanis & Heine, 1863, was accepted by Ogilvie-Grant (1892). Ridgway (1911) listed *sallaei* as a questionable synonym of *T. aurantiiventris* but doubted Sclater's (1857) identification of Bonaparte's specimen. Most later authors accepted the name *braccatus* for the Mexican subspecies of what is now known as *T. violaceus* Gmelin, 1788 (or *T. caligatus* Gould, 1838, sensu Bonaparte, now a subspecies of *T. violaceus* of South America).

Van Rossem (1934) examined a specimen (1856–1022) in the Paris Museum held there as the female that Bonaparte had described as *sallaei*, and identified it as *T. caligatus*. He did not locate the male that Bonaparte had described, but noted that the description applied to a young male of *caligatus* with first-year rectrices. Van Rossem's proposed substitution of the earlier name *sallaei* for the later *braccatus* was rejected by Carriker & Meyer de Schauensee (1935) and Peters (1945) largely on the basis of Sclater's (1857) early association of the name *sallaei* with *aurantiiventris* and uncertainty that van Rossem (1934) had actually located a cotype of *sallaei*. Zimmer (1948) added that although van Rossem had identified the female as a type of *sallaei*, the disputed identity of the lost male precludes use of the name *sallaei*. Nonetheless, other authors (e.g. Dickey & van Rossem 1938, Sutton & Burleigh 1940, Traylor 1941, Wetmore 1941, 1943, Todd 1943, Brodkorb 1943) have used the name *sallaei* for the northern subspecies of what is now *T. violaceus*. On the other hand, some authors (e.g. Miller *et al*. 1957, Russell 1964, Binford 1989) follow Peters (1945) and use *braccatus* for the same population.

We believe that van Rossem was probably correct in his identification of Paris Museum 1856–1022 as the female syntype of *T. sallaei*. We also believe that PM 1856–858 must be the male syntype of *sallaei*.

The collection that Sallé made in Mexico in 1855 included 5 specimens of trogons. Bonaparte (1856) described two of these as *T. sallaei*, mentioned an unspecified number of *T. xalapensis* Du Bus de Gisignies, 1845 (=*T. puella* Gould, 1845, sensu Sclater=subspecific names of *T. collaris*

Vieillot, 1817, a red-bellied species), and described one female of *T. ramonianus* Deville & Des Murs, 1849, now a subspecific name of *T. violaceus* from South America. Sclater (1857) catalogued the Sallé collection at the request of Sallé and Bonaparte, and listed a male and female *T. caligatus* (Sallé's no. 71 = PM 1856–858 and 1856–1022), a male and female *T. puella* (Sallé's no. 69 = 1856–859 and 1856–1023), and one (sex not indicated) "*T. aurantiiventris*" (Sallé's no. 70 = 1856–1024; sent to the Blois Museum in 1930 and since disappeared) with which he associated the name *sallaei*. Sclater apparently erred both in the identification of PM 1856–1024 and in assigning Bonaparte's name *sallaei* to it. We cannot satisfactorily explain Sclater's error, but perhaps he merely wrote the wrong name. By process of elimination, the male listed by Sclater (1857) as *T. caligatus* must be one of the two that Bonaparte (1856) had described as *T. sallaei*. Because there is some uncertainty about which specimen Bonaparte described as the female of *sallaei* and which he described as the female of *ramonianus*, we formally designate the male PM 1856–858 as the lectotype of *Trogon sallaei* Bonaparte.

Acknowledgements

We thank C. Violani for locating the original plate of *T. leverianus* and McGill University, Montreal, for providing a colour photograph of the plate. We are grateful to C. Jouanin for information on the history of the Sallé collections and various catalogues in the Paris Museum, and to M. Tranier who searched the collection at the Natural History Museum in Blois. We also thank S. Olson and R. C. Banks for their helpful comments and reading of the manuscript.

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Phenotypes of adult hybrids between House Sparrow *Passer domesticus* and Tree Sparrow *Passer montanus*

by Pedro J. Cordero

Received 24 August 1990

A pair of male House Sparrow *Passer domesticus* and female Tree Sparrow *Passer montanus* occurred in the wild in 1988 (Cordero 1990a) and in 1989 (Cordero, unpubl.), at Prat de Llobregat, Barcelona, Spain. In 1989 a male and female juvenile hybrids were sexed according to their phenotypical characteristics (Cordero 1990b) and removed from the nest. The birds were kept in an aviary and their plumage described when they were 350 days old. Some biometrical parameters are given in Table 1.

In both specimens the bill, chin and throat were black, the bib pattern being more similar to Tree than to House Sparrow. The lores, postmandibular, subocular and postocular triangle ('mask') were also black in the male, but dark grey in the female. A small whitish stripe above the lores and a minute superior postocular spot were present in both hybrids (as in male House Sparrow) as well as a second (lower) wing bar, more conspicuous than in House but not so bright and wide as in Tree Sparrow.

With respect to sexual differences, the male resembled a large Tree Sparrow, with the centre of crown and nape greyish-brown mottled with reddish-brown (chestnut). The sides of the crown, the postocular stripe (lateral stripe) and the sides of neck were of an intense reddish-brown.

TABLE 1

Measurements of male and female hybrids and of a random sample of parental species. Culmen, maximal length of wing and tarsus (in mm) are taken according to Svensson (1984); mean ± SD, ranges in parentheses

	n	Weight (g)	Culmen	Wing	Tarsus
House Sparrow					
males	5	29.9 ± 1.91 (28.0–33.0)	13.4 ± 0.21 (13.1–13.6)	78.8 ± 1.32 (77.0–81.0)	19.5 ± 0.14 (19.3–19.6)
females	5	28.2 ± 0.68 (27.5–29.5)	12.5 ± 0.19 (12.2–12.8)	77.0 ± 1.67 (75.0–79.0)	19.3 ± 0.42 (18.4–19.6)
Hybrids					
male	1	22.0	13.0	73.0	18.4
female	1	20.5	12.4	71.0	18.3
Tree Sparrow					
males	5	21.4 ± 1.03 (20.4–23.3)	11.1 ± 0.37 (10.8–11.8)	69.4 ± 1.62 (67.0–72.0)	16.7 ± 0.26 (16.5–17.1)
females	5	21.3 ± 2.11 (18.8–23.8)	11.1 ± 0.24 (10.8–11.5)	66.4 ± 1.61 (64.0–68.0)	16.5 ± 0.35 (16.2–17.2)

The ear coverts were greyish-white (pure white in malar region) with a black ear patch, similar but less defined than in Tree Sparrow. An extended white band on the side of the neck was also present, a feature resembling Tree Sparrow. The description of this male is almost identical to the hybrid reported by Rooke (1957) and to the hybrid male reported by Ruprecht (1967).

The female, on the contrary, was like a small male House Sparrow. The crown and nape were greyish-brown, uniform as in first-year male House Sparrow (Selander & Johnston 1967). The cheek was light grey with a grey 'Tree Sparrow-patch' very diffused and almost imperceptible (some male House Sparrows may show a similar greyish patch). The postocular stripe was an intermixture of reddish-brown and very pale brown (buff) flecks. The side of the neck was reddish-brown, paler than in male House Sparrow and sprinkled with brown. The lesser coverts were dark brown as in a female House Sparrow, in contrast to any other black-bib sparrow (shoulder is reddish-brown in first-year and older male House Sparrow, in hybrid male and in Tree Sparrow).

The observations that the female hybrid is closer to House Sparrow and the male hybrid to Tree Sparrow are supported by earlier observations on hybrids in juvenile plumage (Silver 1911, Meise 1951, Cordero 1990b).

The above descriptions suggest that most hybrids reported between House Sparrow and Tree Sparrow were males (see Ruprecht 1967; also Nichols 1919, Rooke 1957, Richardson 1957, Nyholm 1966, Tricot 1968) and the absence of reports of phenotypes like the present hybrid female may be a consequence of the difficulty of recognizing them in the field.

Acknowledgements

I am grateful to D. Summers-Smith and D. T. Parkin, who provided useful comments and helped with the English of an earlier draft of this paper.

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Body weights of some Ecuadorean birds

by J. R. King

Received 29 August 1990

Thomas (1990) has recently outlined the value of avian body weight data in supplementing the wealth of information held in specimen collections. The present paper details 735 weights for 88 species derived from live trappings of birds caught for ringing at two sites in southern Ecuador:

(1) Rio Mazan Valley, Azuay Province (2°52′S, 79°7′W). Trapping was undertaken in high-altitude (3050–3350 m) primary and secondary forest, and adjacent early successional grassland, in July–September, 1986 and 1987. Details of the site and procedures are given in King (1989).
(2) Bosque Domono, Macas, Morona-Santiago Province (2°7′S, 78°8′W). Bosque Domono (1100 m a.s.l.) lies some 20 km due north of the town of Macas, in the extreme south-east corner of Sangay National Park, on the eastern slope of the Andean Cordillera. The area consists entirely of regenerated subtropical forest. Mist-netting took place on nine dates, 24–27 July and 21–25 August 1987.

Weights were taken using 50 g and 300 g Pesola balances, and are given to the nearest 0.1 g for birds under 30 g, otherwise to the nearest 1 g. Trapping periods covered dawn to dusk more or less evenly; thus, any effects of time of day on individual body weight should be accounted for in the ranges given.

For those species for which weights are given by sex, the determination of sex was generally based upon published plumage characteristics. However, as many species were, or had recently been, breeding (King, unpubl. data), some males could be identified as such if they possessed a marked cloacal protrusion (Svensson 1984, Pyle *et al.* 1987). Further, a number of the species involved appear to show significant sexual size dimorphism in linear measurements (King, unpubl. data), and discriminatory analyses (e.g. Griffiths 1968) can be used to assist sex determination in some of these species; details will be published elsewhere.

Individual weights are listed, except where samples exceed 6, for which the number and the mean ± 1 standard deviation are given, with the range in parentheses. Species marked with an asterisk are from Bosque Domono, all the remainder are from Mazan. Nomenclature follows Meyer de Schauensee (1970).

Caprimulgus longirostris: ♂ 39; ♀ 38
*Phaethornis guy**: ♂ 8.1
*Phaethornis superciliosus**: unsexed 6.9, 6.9, 7.1, 7.2
*Eutoxeres aquila**: unsexed 10.2, 10.4
Campylopterus falcatus: ♀ 6.4
Colibri coruscans: unsexed 7.4
*Klais guimeti**: ♀ 2.9
*Thalurania furcata**: unsexed 4.2
*Phlogophilus hemileucurus**: unsexed 3.1, 3.5, 3.6, 3.7
Lafresnaya lafresnayi: 18 ♂♂ 5.43 ± 0.39 (5.0–6.7); 22 ♀♀ 5.24 ± 0.50 (4.5–6.6)
Pterophanes cyanopterus: ♂♂ 9.6, 10.0, 10.6; ♀ 9.1
Coeligena iris: 24 unsexed 6.84 ± 0.33 (6.4–7.6); 19 ♂♂ 7.12 ± 0.26 (6.7–7.7); 10 ♀♀ 6.71 ± 0.57 (6.0–8.0)
Ensifera ensifera: ♂ 11.2; ♀♀ 11.3, 11.6
Heliangelus viola: 8 unsexed 5.98 ± 0.48 (5.2–6.6)
Eriocnemis vestitus: unsexed 4.5, 4.6, 4.7, 4.7; ♂♂ 4.4, 4.7, 4.8; ♀♀ 4.4, 4.6
Eriocnemis luciani: 12 unsexed 5.95 ± 0.23 (5.6–6.3); 8 ♂♂ 6.18 ± 0.20 (5.8–6.4); 11 ♀♀ 5.81 ± 0.22 (5.4–6.2)
Lesbia victoriae: ♀ 5.3
Lesbia nuna: unsexed 3.2; ♂♂ 3.6, 3.9; ♀♀ 3.3, 3.3, 3.6, 3.6, 3.6, 4.3
Rhamphomicron microrhynchum: ♂ 3.5
Metallura baroni: ♂♂ 4.3, 4.3, 4.5; ♀♀ 3.9, 4.0, 4.0, 4.0, 4.1, 5.0
Metallura williami: unsexed 4.1, 4.2, 4.2, 4.4; ♂ 5.3
Metallura tyrianthina: 22 unsexed 3.90 ± 0.53 (3.2–5.1); 54 ♂♂ 3.87 ± 0.29 (3.5–4.9); 34 ♀♀ 3.56 ± 0.41 (2.7–4.9)
Acestrura mulsant: unsexed 4.0
Trogon personatus: ♂ 44
*Picumnus rufiventris**: ♂ 14.4
Veniliornis nigriceps: ♀ 39
*Dendrocincla fuliginosa**: ♂♂ 46, 46; ♀ 51
*Glyphorynchus spirurus**: unsexed 13.9
Synallaxis azarae: 31 unsexed 16.87 ± 0.87 (15.8–19.3); ♂♂ 16.2, 16.5, 16.5, 19.0; ♀♀ 16.8, 17.4
Synallaxis gularis: unsexed 13.0, 14.2
Pseudocolaptes boissonneautii: unsexed 49,51
Thripadectes flammulatus: unsexed 46, 53, 55
*Xenops minutus**: unsexed 12.7, 13.5, 14.0, 15.5
*Thamnophilus schistaceus**: ♀ 21.8
*Dysithamnus mentalis**: ♀ 17.0
*Cercomacra serva**: ♂ 16.7

*Pithys albifrons**: unsexed 21.2
*Hylophylax naevia**: ♂ 13.6; ♀ 14.6
Grallaria rufula: unsexed 37, 40
Scytalopus unicolor: unsexed 17.6, 18.4, 19.6, 20.1
Scytalopus latebricola: unsexed 16.7, 16.9
Ampelion rubrocristatus: unsexed 67
*Pipra pipra**: ♀ 16.1
*Chloropipo holochlora**: unsexed 15.3, 16.6, 16.7, 16.7, 17.0; ♂ 16.4
*Schiffornis turdinus**: unsexed 32
Ochthoeca fumicolor: unsexed 20.1
Ochthoeca rufipectoralis: 11 unsexed 12.27±0.73 (11.3–13.9)
Ochthoeca frontalis: 11 unsexed 11.40±0.54 (10.5–12.1); ♂♂ 10.4, 10.5, 10.8, 11.6, 12.2
Myiobius villosus: ♂♂ 12.5, 13.9
*Myiotriccus ornatus**: unsexed 13.7, 14.5
Anairetes parulus: 7 unsexed 6.14±0.29 (5.9–6.6)
Mecocerculus leucophrys: ♂ 16.0
Mecocerculus stictopterus: unsexed 10.7
*Tyranniscus viridiflavus**: ♂ 10.0; ♀ 9.6
*Mionectes olivaceus**: unsexed 13.0, 13.2, 15.0, 15.5
*Corythopis torquata**: unsexed 18.5
Notiochelidon murina: 7 unsexed 12.46±0.27 (12.0–12.8); ♂♂ 12.4, 12.6, 12.9, 13.3; ♀♀ 11.9, 12.0, 12.2, 12.2, 12.4
Cinclus leucocephalus: 7 unsexed 43.9±7.6 (38–59)
Cistothorus platensis: 19 unsexed 12.52±0.81 (11.1–13.8)
Troglodytes solstitialis: 13 unsexed 12.72±0.64 (12.0–14.2); ♂ 12.0
*Henicorhina leucosticta**: 7 unsexed 15.84±0.80 (14.6–16.7)
*Catharus dryas**: unsexed 37, 39, 44
Turdus fuscater: unsexed 139, 175
*Turdus albicollis**: unsexed 55; ♂ 51
*Myioborus miniatus**: unsexed 9.2, 9.5; ♂ 10.2
Myioborus melanocephalus: 24 unsexed 11.38±0.52 (10.3–14.1)
Basileuterus nigrocristatus: 21 unsexed 13.35±0.80 (11.6–14.7); 13 ♂♂ 14.35±0.80 (13.0–15.4); ♀♀ 13.0, 14.5, 17.2
Basileuterus coronatus: 9 unsexed 16.19±0.87 (14.4–17.2); ♂♂ 15.2, 16.0, 16.7
*Basileuterus fulvicauda**: unsexed 14.5, 15.4
*Coereba flaveola**: unsexed 10.2
Conirostrum cinereum: unsexed 10.0, 10.4
Diglossa humeralis: 17 unsexed 11.75±1.05 (10.0–13.6); 15 ♂♂ 13.15±0.82 (11.7–14.5); 40 ♀♀ 11.84±0.73 (10.8–13.7)
Diglossa cyanea: unsexed 17.8, 18.5; ♂♂ 17.0, 17.0; ♀ 16.4
Diglossa sittoides: ♀ 7.7
*Euphonia xanthogaster**: ♂♂ 14.8, 15.9; ♀♀ 13.4, 14.4, 14.4, 14.5, 14.6, 14.6, 15.6
*Chlorochrysa calliparaea**: ♂ 17.0
Tangara vassorii: ♂ 18.8; ♀♀ 17.1, 17.8
Dubusia taeniata: unsexed 36, 38, 42
Thlypopsis ornata: ♂ 12.1
Hemispingus superciliaris: unsexed 14.6, 14.6, 16.0, 16.8; ♀ 16.0
Catamblyrhynchus diadema: unsexed 18.3
Pheucticus chrysopeplus: ♀♀ 50, 52
Catamenia analis: ♀ 16.6
Catamenia inornata: ♂♂ 12.3, 12.7, 13.4, 14.3, 14.5; 11 ♀♀ 13.41±0.54 (12.6–13.2)
Atlapetes rufinucha: 20 unsexed 30.4±2.2 (26–40)
Atlapetes torquatus: unsexed 45, 45, 46
*Arremon aurantiirostris**: unsexed 25.5, 25.7, 25.9; ♂ 24.5
Zonotrichia capensis: 12 unsexed 22.88±1.23 (21.3–25.4)

Acknowledgements

CREA, ETAPA and MAG provided invaluable practical assistance in Ecuador. A. Gretton extracted the data for 1986. Several people assisted in the field, notably Messrs. J. Dauris, M. Hancock and S. J. Holloway.

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The type locality of *Halcyon coromanda rufa* Wallace

by G. F. Mees

Received 11 September 1990

Halcyon rufa (now *Halcyon coromanda rufa*) was described by Wallace (1863: 338) from "Sula Islands and Celebes". Soon afterwards, Sharpe (1870: text to pl. 57) listed a specimen labelled 'Macassar', which at that time was in Wallace's private collection, as the type of *H. rufa*. On the accompanying plate, this specimen is beautifully illustrated. Wallace's private collection was acquired by the British Museum in 1873 (cf. Sharpe 1906: 258), and in the Museum catalogue this same specimen was again listed as the type (Sharpe 1892: 221). By Warren (1966: 251) it is, perhaps more correctly, referred to as syntype.

As long as birds from Celebes and birds from the Sula Islands were thought to be consubspecific, the matter of the type locality of *H. rufa* was of no practical interest. In 1939, however, Neumann described *H. c. pelingensis* from Peling Island, between Celebes and the Sula Islands. This subspecies was diagnosed as being: "Similar to *Halcyon coromanda rufa* Wallace from Celebes, but much smaller, wing 106–115 mm., as against 120–126 mm. in *H. c. rufa* Wallace. Culmen 53–56 mm., as against 62–67 mm. in *H. c. rufa*. . . . Mr. Kinnear tells me that the type of *H. c. rufa* Wallace from Macassar, Celebes, has a wing-length of 120 mm., therefore 5 mm. more than my largest specimen." Neumann commented that the distribution of *H. c. rufa* (Celebes and the Sula Islands) then seemed rather strange. That is as far as Neumann's published contribution goes.

Peters (1945: 195) unexpectedly changed the type locality of *H. rufa* with the comment: "the type in the British Museum was collected by

Allen either on Mangoli or Besi, *fide* O. Neumann, *in litt.*)". To later authors, the reasons for this change were obscure, hence unacceptable (cf. Mees 1970: 301; Hubbard & duPont 1974: 25).

The explanation of what had happened was provided by Mr S. Eck (*in litt.*, 21 June 1975), who sent me the following quote from a letter from Neumann to O. Kleinschmidt (dated 31 December 1940): "Denn der Typus von *H. c. rufa* Wallace stammt nicht, wie irrtümlich auf dem Etikett (nicht von Wallace selbst geschrieben), von Makassar, sondern von den Sula Inseln. Das ist eine viel grössere Rasse, von der ich auch Stücke von Taliaboe erhielt. Das geht ja schon aus Wallace's Orig. Beschreibung und Sharpe Cat. Birds deutlich hervor!". A short discussion of this letter was published by Eck (1976: 76–77).

Evidently, Neumann had realised later that resident birds from Celebes are smaller than he first thought. The measurements he published must have been from migrant visitors of *H. c. major*, a long-winged subspecies which breeds in Japan and winters in the Philippines and the northern peninsula of Celebes. A wing-length of 120 mm, as recorded for the type-specimen of *H. rufa*, must have seemed to him too large for a bird from Celebes, and as it agreed in this character with specimens from the Sula Islands (of which Neumann had, in the meantime, received two), he concluded that an error in labelling had been made, and that the type-specimen, labelled 'Macassar', was actually from the Sula Islands.

The letter failed to convince me, mainly because Sharpe's plate of the type shows it to be a dark bird, with a blue rump. The Sula subspecies, since described under the same of *sulana*, is a little less dark, and has an almost white rump-patch, only its margins being slightly tinged with blue. Nevertheless, an element of doubt remained at the back of my mind: the consciousness that there was some unfinished business here, which should be resolved by a personal examination of the type in question.

It was only in June 1990 that I had an opportunity to visit Tring, and could study the type. The specimen (♂) has an original Wallace label, inscribed 'Makassar, 1856'. Measurements I took from it are: wing 120, tail 70, tarsus c. 16½, entire culmen 65.3, culmen from anterior point of nostril 51, width of bill across the nostrils 17 mm. Wing-formula: 4th primary longest, marginally (about 1 mm) longer than the 3rd and the 5th, which are equal, and 2nd primary 7 mm shorter than 3rd. The generally dark plumage, the azure blue rump, and the comparatively short tail (tail:wing index 58.3%; in *sulana* it averages over 65%) all place this bird as a large specimen from Celebes, so that there is no reason to doubt the provenance from Makassar as indicated on its label. In a series of 17 specimens from Celebes previously measured by Mees (1970), the range of variation was: wing 113–118, tail 59–67½ mm. The largest bird had wing 118, tail 67½ mm. Hence, the Makassar specimen with wing 120, tail 70 mm, is certainly a large one, but hardly exceptionally so. How did Kinnear and Neumann come to make the mistake? Simply because there are no specimens of *H. coromanda* from the Sula Islands in the British Museum, and because Neumann never examined the type-specimen of *H. rufa*, relying thus exclusively on the measurements supplied by Kinnear.

Although the British Museum specimen from Makassar has been regarded as the type of *H. rufa* since 1870, and may be considered to have been made a lectotype by Sharpe (ICZN, 1985: art. 74), it would still be of interest to know what other material Wallace had when he described *H. rufa*. Judging by his title, one would assume that he had at least one specimen from the Sula Islands. To this I can only say that hitherto I have failed to trace any. The Makassar specimen is the only type of *H. c. rufa* known to me.

In conclusion: the examination of the lectotype of *Halcyon rufa* in the British Museum has confirmed its provenance Makassar, and therefore supports the nomenclature used in recent years by Eck, Hubbard & duPont, Mees, etc., with *H. c. rufa* in Celebes, *H. c. pelingensis* on Peling, and *H. c. sulana* in the Sula Islands.

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The red-tailed buzzards of Zaïre

by M. Louette

Received 12 October 1990

The Red-necked Buzzard *Buteo auguralis* breeds during the dry season in western and west-central Africa (including Uélé in Zaïre: January–March, Chapin 1932), and migrates during the rainy season towards the north (Brown 1970). In this country, contrary to Brown's map and Lippens & Wille's (1976) statement "assez commune dans presque tout le Zaïre", it is only definitely known from the extreme north and extreme west (Schouteden 1948, 1950, Snow 1978), being absent from most of Kivu and Eastern (now Upper Zaïre) provinces and the whole of Shaba and Kasai, these regions lacking to a large extent breeding buzzards (see position of regions on maps in Louette 1989, 1990). Also, P. Herroelen never saw a buzzard during ten years of residence (1950–1960) in the southern (forested) part of Equateur province; Chapin (1932) gives only Lukolela (1°07′S,17°11′E; no date, "not common") as a locality outside the "main" range. South of the Equator, in the west of Zaïre (Kwilu), Wille (in Lippens & Wille 1976) saw *auguralis* from January to March, supposing them to be migrants; at that period they should be nesting in the north (unless these were immatures), but I think these birds belong to another population. It is noteworthy that the species definitely breeds in extreme western Zaïre, since a young bird, just out of the nest (sited in a tree near a river), was collected for the KMMA at Tumba, Lower Zaïre province (5°31′S,14°36′E), 2 September 1938. Menegaux & Van Saceghem (1918) had already mentioned its breeding in this region, but because they may have confused two species (?), better proof was necessary. *Buteo auguralis* is also proven to breed in western Angola (bird with primaries not completely developed from Duque de Braganza, no date, Barboza du Bocage 1881; another "just able to fly" at Malandje, Hartert & Neumann 1914; downy young and large nestlings found in October in Bié province, Traylor 1963), but the status of the species, though widespread in the northwestern part, is inaccurately described in that country (cf. Snow 1978, Pinto 1983, Dean *et al.* 1988). The dated adult specimens from Lower Zaïre are from March, July and October. According to Bouet (1955), Petit collected the species at Landana (Cabinda) in April, June and September and Dean (1978) saw it occasionally in Cabinda in August. Specimens from western Gabon are from July ("assez abondant en saison sêche", Malbrant & Maclatchy 1949) and from June and August (Rand *et al.* 1959). All these are far more likely to be local breeding birds in this well-forested area ('Mayombe'), rather than migrants from the northern population.

Somewhat to the north in the equatorial forest, near Makokou in eastern Gabon, Brosset & Erard (1986), over a long period, saw this buzzard only four times, all in December–January. Quite likely the populations in the two hemispheres are segregated, the one in the southern hemisphere breeding only in the Mayombe–Angola region, during the dry season, dispersing somewhat to the surrounding areas (e.g. eastern Gabon and Kwilu, Lukolela in Zaïre) with the rains, at the opposite time of year to the larger northern population. It is certain that the species breeds in the northern rim of the equatorial forest in Cameroon, not very far from the southern breeding range. Nestlings were taken by Serle (1950) near Mount Manengouba (at *c.* 5°05′S,9°50′E) from rock nests in March, and Germain *et al.* (1973) had a juvenile from Batouri (4°26′S,14°22′E) also from March, in the dry season in the northern hemisphere.

In any case, there seem to be no differences in measurements or plumage characteristics between birds of both hemispheres. Published measurements include those of 12 specimens in Bannerman (1930) and wing and weight means and ranges in Thiollay (1977) from 8 specimens of Côte d'Ivoire; a selection from these two sources figures in Brown *et al.* (1982). Table 1 gives my measurements of adult ('red-tailed') specimens from the two regions in Zaïre. There is a dimorphism among the adults of both regions, two plumage types being present: (1) with a completely dark

TABLE 1
Measurements in mm of adult Zaïre specimens of *Buteo auguralis*

Region	Sex (from label)	Wing chord	Tail	Culmen from cere	Hind claw
Lower Zaïre					
dark breast	—	337.0	173.0	—	—
dark breast	f	354.0	189.5	22.0	25.5
streaked breast	f	—	188.0	21.5	22.0
streaked breast	f	360.0	193.5	22.5	23.0
streaked breast	—	349.0	177.0	24.0	23.0
Uélé, Ituri					
dark breast	f	355.0	182.5	23.5	24.5
streaked breast	f	356.0	185.0	24.0	25.0
streaked breast	m	351.5	180.5	22.0	24.0

brown breast, and (2) with brown streaks on white on the breast. In this restricted sample no differences in size appear, nor do the label data (but these may not be reliable) suggest that the plumage types correspond to the two sexes. Based on the moult sequence in specimens towards a red tail, birds having this latter character are surely adult; hence the plumage illustrated as immature in Brown *et al*. (1982) is in fact a type 2 adult. The immature is streaked on the belly, like a type 2 adult, but has a brown, indistinctly barred, not a red tail, and no reddish on the head or on the edges of feathers on the mantle (see also description in Hartert & Neumann 1914). Probably the smaller population in the southern hemisphere is the result of recent immigration from the north, during a period when the equatorial forest was not a formidable barrier (this buzzard is not really a species of deep forest, cf. Thiollay 1975 and the scarcity of records in forest areas in Zaïre, Gabon and Cameroon). There are other examples of species which have apparently spread in the same way: *Dendropicos goertae* (Louette & Prigogine 1982), *Batis minor* (Louette 1987), *Crinifer piscator* (see Snow 1978).

In the KMMA collection, an Augur Buzzard *Buteo augur* taken at Banana (6°00′S, 12°24′E; at the coast) in March 1951 was found, incorrectly placed under the previous species (confirmed by A. H. James). J. Mesmaekers, the collector, worked only in that area, so I accept the locality as the first record from western Zaïre of this (normally resident) mountain bird, about 1000 km from its nearest known haunts in Angola (*pace* Traylor 1963, Snow 1978); it must have been a vagrant. This bird is not adult, because although its tail is reddish, with a terminal brown band and some brown barring, the other plumage characters point towards an immature. Dorsally, its mantle is pale brown with some rufous edging; ventrally, it is white from the lower breast downwards (the upper breast has some brown streaks). The thighs are white with some pale rufous. The under wing-coverts are white, unlike *B. rufofuscus*. This immature plumage is not quite matched by any of the numerous specimens from eastern Zaïre, Rwanda and Burundi in KMMA, but in measurements (in mm: wing chord left 436, right 440, tail 215, culmen from cere 26.5, hind claw 28.5, tarsus 83) it agrees completely with *augur* (see Brooke 1975).

In Zaïre, except for the mountains on the eastern border, where the species is common (Schouteden 1948, 1950), there are only the three specimens that Verheyen (1953) took in the Upemba Park (Shaba). As mentioned under the previous species, there is no resident buzzard in much of lowland Zaïre, confirmed by the fact that *B. augur* also does not normally occur in the neighbouring areas of Zambia (Benson *et al.* 1971, in part *contra* Benson & White 1957), and in Angola is found only locally in the mountains of the southwest (Pinto 1983).

Both red-tailed buzzard species are thus allopatric but since they are so different in size and ecology they are no vicariants. The brown-tailed Mountain Buzzard *B. oreophilus* is the only other breeding *Buteo* in tropical Africa, occurring in the same general range—mountains—as *B. augur*; James (1986) supposes it to be taxonomically related to *B. auguralis*. The absence of the nearly cosmopolitan genus *Buteo* from much of southern Zaïre (where one would expect *B. auguralis*, a lowland bird, to occur) is paralleled e.g. in such birds as *Falco tinnunculus* (Louette 1989), the genus *Agapornis* and the grey touracos *Corythaixioides*/*Crinifer* (see Snow 1978). One wonders if insufficient coverage of this region by ornithologists is the reason, or if these absences are real and due to a common factor. The southern peri-forest woodlands do lack a number of species that exist north of the Equator and they also possess species without counterparts in the north, resulting from their different zoogeographical history.

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BOOKS RECEIVED

Alerstam, T. 1990. *Bird Migration.* Pp. vii + 420. 137 text-figures. Cambridge University Press. ISBN 0 521 32865 9 hardback. £55.00. 25 × 19 cm.

An updated translation of a book published in Sweden in 1982, this is an unusual and excellent survey of bird migration. It is unusual in its strong emphasis on fundamentals, and the spirit of enquiry which pervades every chapter. Thus it begins by discussing the basic causes of migration, chief of which are the amount of heat from the sun which falls on different parts of the earth's surface and the 23.5° tilt of the earth's axis, which causes the seasons. From this basis, a series of 10 chapters, constituting nearly half of the text, discusses the breeding and winter quarters of the main ecological groups of birds, based on their feeding habits, and the factors which have led to the evolution of the resulting patterns of migration. This is followed by another series of 9 chapters on "the migratory journey", dealing with such topics as flight speed and height, different methods of flight, fat as fuel, the effect of weather and wind direction, and the hazards of migration. These chapters, far from being dry summaries, include detailed treatment of dozens of interesting examples. A final shorter section of 3 chapters deals very adequately but in less detail with the experiments which have been directed at solving the difficult, and still largely unresolved, problems of orientation and navigation.

The coverage is world-wide, and the treatment is authoritative, as would be expected from an author who has wide experience of original research on bird migration based at Lund, a leading university for ecological studies. The illustrations (largely maps and diagrams; no bird portraits) are clear and useful, and the translation very good, only occasionally betraying evidence that it *is* a translation. Thoroughly recommended.

Baldwin, Peter J. & Meadows, Brian S. *Birds of Madinat Yanbu Al-Sinaiyah and its Hinterland.* Pp. 74. Royal Commission for Jubail and Yanbu. No price given.

An account of the natural and man-made habitats of the new industrial city of Madinat Yanbu Al-Sinaiyah, on the Red Sea Coast, 350 km north of Jeddah, and observations of birds recorded there, between 1979 and 1987. The book, arranged for both English and Arabic readers, contains many drawings, photographs, charts and tables and includes an annotated systematic list. It should please both residents and visitors.

Dickinson, E. C., Kennedy, R. S. & Parkes, K. C. 1991. *The Birds of the Philippines.* British Ornithologists' Union Check-list No. 12. Pp. 448, maps, 8 pages of coloured plates. Hard covers. £36 (UK), £39 (overseas) post free surface mail. Available from BOU, c/o Zoological Museum, Tring, Herts HP23 6AP, UK.

An important addition to the BOU series, due to be published late April 1991. The authors have had extensive experience in the Philippines in the field, while the data used for the Systematic List of 556 species (169 endemics) have been gleaned from unusually extensive museum and literature research; many previously unpublished records are included. There are preliminary chapters on Climate, Geography, Vegetation (with coloured map), Biogeography, Geographical Variation, Breeding, Migration, Conservation and Ornithological History. There are also a list of collectors, a gazetteer and an extensive list of references. Emphasis is on taxonomy and distribution. The colour plates include a full page photograph of the endangered Philippine Eagle at the nest.

Perrins, C. M. (Ed.-in-Chief). 1990. *The Illustrated Encyclopedia of Birds. The Definitive Guide to the Birds of the World.* Pp. 420. Fully illustrated in colour and black-and-white. Headline Book Publishing, in association with ICBP. Hard covers. £30 (in UK only). 30 × 23 cm.

Despite its high-flown sub-title and its coffee table book appearance, this is a useful and well illustrated book for the tyro which depicts some 1200 species, representing every family of the world's 9000 or so living birds, and provides a coloured portrait of each. There is a succinct summary for each species on range and habitat, with brief comments on the systematics of the species chosen or its genus, and a paragraph on breeding and field habits. The introductory chapters are basic and there is important emphasis on conservation of endangered species and habitats. There is a World List of species at the end of the book, a comprehensive index and a list of 18 artists detailing their contributions, though one is left to guess which contribution is made by which of the 40 cited authors.

Ratcliffe, D. 1991. *Bird Life of Mountain and Upland.* Pp. xi + 256. Drawings, photographs and maps. Cambridge University Press. ISBN 0 521 33123 4 hardback. £19.50. 25 × 19 cm.

The title might give the impression that this is just another run-of-the-mill general account of an attractive group of birds. It is in fact much more: an authoritative, thoughtful and very well written survey with a strong emphasis on ecology, based on the author's long experience as both field ornithologist and botanist, and as a senior scientist on the staff of the Nature Conservancy. After introductory chapters on the geographical, climatic and evolutionary history of British uplands, and on the birds considered as upland species (66 species, the choice of some being admittedly debatable), a series of 6 chapters deals with the birds by ecological groups—birds of the sheep-walks, grouse moors, deer forests etc. These chapters, forming the core of the book, are a stimulating mix of fact and ecological interpretation, with much that would be hard to find from other sources. After a penultimate chapter on geographical aspects of the composition of the British upland avifauna, a final chapter deals more generally with conservation. The author does not mince his words when mentioning the present government's reluctance, in the face of powerful sectional interests, to implement the international conservation conventions to which this country is a signatory. The delightful drawings, by Chris Rose, of landscapes and birds deserve special mention.

NOTICE TO CONTRIBUTORS

Papers, from Club Members or non-members, should be sent to the new Editor to be nominated at the AGM, Dr D. W. Snow, Old Forge, Wingrave, Aylesbury, Bucks HP22 4PD, U.K., and must be offered solely to the *Bulletin*. They should be typed on one side of the paper, with **treble**-spacing and a wide margin, and submitted in duplicate. The style and lay-out should conform with usage in this or recent issues of the *Bulletin*. Informants of unpublished observations should be cited by initials and name only, e.g. "... of grass (C. Dieter)", but "P. Wee informs me that ...". A limited number of photographic illustrations in black-and-white may be published annually at the Editor's discretion. Authors are requested to give their title, initials, name and full address at the end of the paper.

An author wishing to introduce a new name or describe a new form should append **nom., gen., sp.** or **subsp. nov.,** as appropriate, and set out the supporting evidence under the headings "Description", "Distribution", "Type", "Measurements of type" and "Material examined", plus any others needed.

A contributor is entitled to 10 free offprints of the pages of the *Bulletin* in which his contribution, if one page or more in length, appears. Additional offprints or offprints of contributions of less than one page may be ordered when the manuscript is submitted and will be charged for. Authors may be charged for proof corrections for which they are responsible.

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Available on application to the Hon. Treasurer, as below, as follows; 1983 and after (Vols 103 onwards) £3.50 each issue, 1981–2 (Vols 101 & 102) £3 each issue, 1980 (Vol. 100) No. 1 £4, Nos 2, 3 & 4 £2 each, 1973–9 (Vols 93–99) £2 each issue (4 issues per year for Vol. 93 and after), 1969–72 (Vols 89–92) £1.50 each issue (6 per year), 1929–68 (Vols 50–88) £1 each issue (generally 9 per year), earlier than Vol. 50 £2 each issue (generally 9 per year); Indices Vol. 70 and after £1 each, Vols 50–69 £2 each, Vol. 49 and before £4 each. Long runs (at least 10 years) for Vol. 50 and after are available at reduced rates on enquiry. Postage & Packing £1.00 for U.K., £2 for Europe (airmail), £3 for all other areas (airmail), orders over £50 post free.

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The *Bulletin* is despatched from the printers on publication and is sent by Surface Saver Postal Services to all European destinations outside the U.K. and by Air Saver Postal Services to destinations outside Europe. Those whose subscriptions have not been received by the beginning of a month of publication will have their copies despatched by surface mail, after their current subscription has been paid.

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Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

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ISSN 0007-1595

Bulletin of the

British Ornithologists' Club

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Volume 111 No. 2 June 1991

FORTHCOMING MEETINGS

Tuesday, 9 July 1991. Mr R. E. Scott will speak on birds in Bulgaria—**"Collared Doves and Yoghourt".** Mr Scott is currently Head of Reserves Management Department at the RSPB. He first visited Bulgaria in 1982, and has subsequently made a further six professional and private visits there. He worked with Bulgarian ornithologists to establish the Bulgarian Society for the Protection of Birds. Those wishing to attend should notify the Hon. Secretary by Tuesday 25 June 1991*.

Tuesday, 17 September 1991. Mr G. R. Welch will speak on **"Djibouti—Gateway to Africa"** an account of the avifauna, raptor migration and conservation problems there. Mr Welch, who has been a full-time warden with the RSPB since 1978, is now Warden of Minsmere. He and his wife are Council Members of OSME; and they have made several visits to Djibouti since 1984.

Those wishing to attend should notify the Hon. Secretary by Tuesday 3 September 1991*.

Tuesday, 22 October 1991. Dr R. A. Cheke will speak on the birds of Togo.

Tuesday, 26 November 1991. The Chairman, Mr R. E. F. Peal, will speak on birds of N.W. Morocco.

Meetings are held in the Senior Common Room, Sherfield Building, Imperial College, London SW7 at 6.15 pm. for 7 pm. A plan showing Imperial College will be sent to members on request.

*It is usually possible to take acceptances up to the Sunday before the meeting, but members are asked to accept by 14 days beforehand as arrangements for meetings have to be confirmed with Imperial College well in advance.

If you accept and subsequently find you are unable to attend please notify the Hon. Secretary, 1 Uppingham Road, Oakham, Rutland LE15 6JB (tel. 0572 722788) as soon as possible.

Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 111 No. 2 Published: 28 June 1991

The eight hundred and sixth meeting of the Club was held on Tuesday, 22 January 1991 in the Senior Common Room, Sherfield Building, Imperial College, South Kensington at 6.15 p.m. 38 members and 20 guests attended.

Members present were: R. E. F. Peal (*Chairman*), M. A. Adcock, Miss H. Baker, R. Beecroft, P. J. Belman, Mrs D. M. Bradley, P. J. Bull, D. Calder, Cdr M. B. Casement, RN Retd, Dr R. Cheke, I. Collins, P. J. Conder, D. St J. Court-Smith, Dr R. A. F. Cox, M. J. Earp, J. H. Elgood, S. J. Farnsworth, G. D. Field, A. Gibbs, Rev. T. W. Gladwin, D. Griffin, C. A. R. Helm, R. H. Kettle, Dr J. F. Monk, A. G. Moore, Mrs A. M. Moore, R. G. Morgan, R. C. Price, A. J. Randall, M. L. Romer, P. J. Sellar, R. E. Sharland, N. H. F. Stone, Dr A. Tye, Dr J. F. Walsh, Mrs E. F. Warr, Dr J. B. Wood, K. P. Wood.

Guests attending were: B. Pearson (*Speaker*), Mrs B. Adcock, Dr J. Bradley, D. G. Brooks, Mrs J. Bull, Professor R. Chandler, Mrs J. Collins, R. Collins, A. Cox, Miss J. Edrich, Mrs F. Farnsworth, O. Graham, P. J. Moore, R. Newton, Mrs H. Price, Mrs S. Stone, Mrs H. Tye, H. Thompson, A. J. Warr, Mrs J. M. Wood.

After supper Bruce Pearson spoke about travelling in West, Central and East Africa on his painting and film-making expeditions. He illustrated his talk with photographs of his work, in which he specialises in painting birds and landscapes; and showed how his technique had developed during this time.

The eight hundred and seventh meeting of the Club was held on Tuesday, 19 February 1991 in the Senior Common Room, Sherfield Building, Imperial College, South Kensington at 6.15 p.m. 30 members and 20 guests attended.

Members present were: Dr J. F. Monk (*Chairman of the meeting*), Dr M. Kelsey (*Speaker*), M. A. Adcock, Miss H. Baker, P. J. Belman, K. F. Betton, R. H. C. Bonsor, Mrs D. Bradley, Cdr M. B. Casement, RN Retd, I. D. Collins, P. J. Conder, J. H. Elgood, S. J. Farnsworth, G. D. Field, C. Helm, R. H. Kettle, Dr P. Lack, Mrs A. M. Moore, R. G. Morgan, Mrs M. Muller, P. Oliver, R. C. Price, Dr R. P. Prys-Jones, S. Rumsey, R. Scott, Dr R. C. Self, P. J. Sellar, R. E. Sharland, Dr D. Snow, N. H. F. Stone.

Guests attending were: Mrs B. Adcock, M. Anstead, Dr J. Bradley, D. Brooks, Mrs W. Brooks, Mrs F. Farnsworth, Ms K. Hoff, Dr P. M. Hughes, Mrs C. Kelsey, Mrs D. Lack, E. N. Madsen, Mrs J. J. Madsen, P. J. Moore, M. Paling, Mrs H. Price, R. Ranf, P. Salaman, Mrs A. Scott, D. A. Waters, M. S. Witter.

Dr Martin Kelsey gave the address on 'Wintering of Marsh Warblers'. He has sent the following résumé: The Marsh Warbler *Acrocephalus palustris* is a summer migrant to the Western Palearctic, breeding in tall, luxuriant vegetation along valley bottoms, old ditches and other damp situations. The species migrates from late July, through the Middle East, making landfall in Africa on the Sudanese coast of the Red Sea. After an apparent pause for about two months in north-east Africa, where the adults undergo a body moult, the entire world population continues southwards in a narrow migration front through eastern Kenya during November and December. This migration strategy, shown by several other Palearctic migrants in East Africa, enables the bird to follow the annual southward passage of the rains in the autumn. The final wintering quarters in southern Africa are not reached until December, with some individuals not arriving until late January. On the wintering quarters, individuals occupy very small home ranges which, like the foraging areas on the breeding grounds, show overlap with neighbours. Most, if not all, individuals sing during their sojourn. The song patches show no overlap and song probably has a territorial function to safeguard food resources during the latter part of the winter when the birds are completing their annual moult and the rains draw to a close.

The eight hundred and eighth meeting of the Club was held on Tuesday, 19 March 1991 in the Ante-Room, Sherfield Building, Imperial College, South Kensington, London at 6.15 p.m. 28 Members and 21 Guests and 1 Guest of the Club, Dr J. P. Croxall, attended.

Members present were: R. E. F. Peal (*Chairman*), M. A. Adcock, P. J. Belman, K. F. Betton, Mrs D. Bradley, P. J. Bull, Cdr M. B. Casement, RN Retd, I. Collins, S. J. Farnsworth, A. Gibbs, D. Griffin, Rev. T. W. Gladwin, C. Helm, R. H. Kettle, Rev. G. K. McCulloch, Dr J. F. Monk, Mrs A. M. Moore, R. G. Morgan, Mrs M. Muller, P. J. Oliver, J. G. Parker, R. C. Price, Dr R. P. Prys-Jones, A. J. Randall, P. J. Sellar, N. H. F. Stone, Dr A. Tye, C. H. Wheeler.

Guests attending were: Mrs B. Adcock, Miss J. Alexander, M. Anstead, Cdr M. K. Barritt, RN, Mrs F. Farnsworth, H. Fuller, Mrs R. Swift, Mrs B. Gibbs, J. Gilbey, Mrs J. Gladwin, Mrs N. Liddell, Mrs I. McCulloch, Mrs E. N. Madsen, J. J. Madsen, D. Milne, QC, Mrs R. Milne, Mrs D. Monk, P. J. Moore, Mrs M. Oliver, Mrs H. Price, Mrs H. Tye.

After supper Dr John Croxall gave the address "The Decline of the Wandering Albatross". After an introduction to the avifauna of the sub-Antarctic island of South Georgia, he spoke on the nature of, and reasons for, the decline in breeding populations of the Wandering Albatross *Diomedea exulans*. The decline was first recognised at South Georgia in 1979, where it is averaging 1% per annum, the present breeding population being only 60% of that in the 1960s. Similar declines have since been reported at all other breeding sites where adequate data exist. Detailed population studies at South Georgia (Croxall *et al.* 1990) have shown that the principal causes of the decline are decreases in juvenile survival (by 6% per annum) and in adult survival (by 1–2% per annum with females showing significantly lower survival rates than males). Because breeding success is high and has increased over the last 15 years, causes of the population decline are likely principally to reflect events outside the breeding season and away from South Georgia. Analysis of 30 years of ringing recoveries (Croxall & Prince 1990) indicated that since 1975, significantly more birds have been recovered in fishing operations and that 75% of these (compared to none before 1975) involved long-line fishing for tuna. These fisheries do not operate south of 60°S and three-quarters of the recoveries of known-sex birds were of females, the sex which is known to range furthest north. Direct confirmation of long-line fishing vessels catching albatrosses (and other seabirds) has now been obtained by Australian scientists (Brothers 1991). The catch rate of Wandering Albatrosses would represent about half the annual losses of adults and three-quarters of that of juveniles in the South Georgia population. The magnitude of the problem and the undesirability of catching albatrosses stimulated the Japanese trawler-owners federation to permit investigation of ways of preventing seabirds being caught during fishing; pilot studies have been successful and it now remains to ensure that the appropriate measures are taken throughout the world fleet of tuna long-line fishing boats.

A number of important lessons emerged from this case-history. First, the value of long-term population studies in detecting the signs and helping resolve the causes of population change. Second, the time it takes to do this and the even longer time it may take to implement remedies (thus even if albatross survival returned instantly to 1960s rates, the South Georgia population is likely to decline for a further 8–10 years). Third, a concern that many other seabird species, for which no adequate population data exist, may currently be significantly affected by one or more of the many factors adversely influencing marine ecosystems.

Brothers, N. 1991. Albatross mortality and associated bait loss in the Japanese long-line fishery in the Southern Ocean. *Biological Conservation* 55: 255–268.

Croxall, J. P. & Prince, P. A. 1990. Recoveries of Wandering Albatrosses *Diomedea exulans* ringed at South Georgia, 1958–1986. *Ringing and Migration* 11: 43–51.

Croxall, J. P., Rothery, P., Pickering, S. P. C. & Prince, P. A. 1990. Reproductive performance, recruitment and survival of Wandering Albatrosses *Diomedea exulans* at Bird Island, South Georgia. *J. Anim. Ecol.* 59: 773–794.

CHARITY COMMISSION

Charities—British Ornithologists' Club.

The Charity Commissioners have made a Scheme for this charity. A copy can be obtained by sending a stamped addressed envelope to St Albans House, 57–60 Haymarket, London SW1Y 4QX, quoting reference number 279583–A1–LA.

AMBERLEY M. MOORE
5 March 1991 Honorary Secretary

CHARITY COMMISSION

In the matter of the Charity consisting of certain Trust Property held in connection with the British Ornithologists' Club, which Charity is regulated by trust deed dated the 27th February 1958; and
In the matter of the Charities Act 1960

THE CHARITY COMMISSIONERS FOR ENGLAND AND WALES HEREBY ORDER that the following Scheme be approved and established:—

SCHEME

Sub-clause (2) of clause 10 of the above-mentioned trust deed dated the 27th February 1958 shall have effect as if for the figure "50" therein there were substituted the figure "10".

Sealed by Order of the Commissioners this 21st day of January 1991.

A new cisticola from west-central Africa

by C. Chappuis & C. Erard

Received 15 September 1990

In May and June 1972, in the course of one of his extensive field-trips for tape recording the calls and songs of West African birds, one of us (C. Chappuis) was working on the nominate and *guinea* races of the Red-pate Cisticola *Cisticola ruficeps* (Cretzschmar). He discovered that some populations of what seemed to be that species were characterized by a very peculiar song. Thus he collected two males of these enigmatic birds.

Considering, from his own experience, that *guinea* and the nominate subspecies have similar calls and songs, he concluded that these particular birds were something else.

At that time, Vielliard (1972) identified as *Cisticola ruficeps mongalla* Lynes a specimen he collected in 1970 at Bekao, southern Chad, in an area where Chappuis heard only the peculiar song, not the 'usual' one. So we considered that the problem could be solved by ranking *mongalla* as a species. Though comparisons of Chappuis' specimens with true *mongalla* at the British Museum were not quite convincing, this solution was adopted in Chappuis (1974).

Thus the matter remained until one of us (C. Erard) discussed it with Dr R. B. Payne who was writing his paper on the use of bird songs in avian systematics (Payne 1986) and with Melvin A. Traylor, Jr, who was preparing the 11th volume of the *Check-list of Birds of the World* (Traylor 1986). It was then realized that Lynes (see Lynes 1930, Lynes & Sclater 1934) was familiar with the calls and songs of most if not all Red-pate Cisticola subspecies. Such a clear-cut difference in song would not have escaped the attention of someone so meticulous and sharp of hearing. This is why Traylor (1986: 97) writes that we are dealing with a sibling species of *C. ruficeps* which will require a name of its own. We propose to name it:

Cisticola dorsti sp. nov.

The diagnosis, details of type etc. are given later, following the morphological and acoustical analysis, and distributional data, on which the decision is based.

Morphological analysis

We compared the material referable to this intriguing cisticola (two males collected by Chappuis and one obtained by Vielliard) with specimens of *C. ruficeps* kept in Paris, Tring, Bruxelles, Tervuren, Chicago, Washington and New York. The task was not easy, because *dorsti* specimens being males in breeding dress, we had to rely only on birds of that sex and plumage. It soon became apparent that such birds are not common in collections, compared to non-breeding specimens. We will not describe the non-breeding plumages here; see Lynes (1930).

Before discussing the results of our morphological comparisons, it is necessary to review briefly the existing subspecies of *Cisticola ruficeps*; their distributions will not be described here (see White 1962, Traylor 1986).

Cisticola ruficeps guinea Lynes, 1930, differs from nominate *ruficeps* (Cretzschmar, 1830) by a much darker pigmentation of the upperparts, which reduces the contrast between cap and mantle, and even makes the white extremities of the tail-feathers appear not so bright and pure. It is also somewhat larger (see wing and tail lengths in Table 1).

Cisticola ruficeps mongalla Lynes, 1930, appears still darker, colder and greyer than *guinea*, with the back more or less dappled with smoke-grey.

Cisticola ruficeps scotoptera Lynes, 1930, is greyer than *ruficeps* and *guinea* but lighter than *mongalla*. The rust-red cap distinctly contrasts with the light smoke-grey mantle.

All these particulars concern birds in breeding dress. It may be noted here that these geographical races are even better distinguished by their non-breeding plumage. We should also mention that all these forms display a 'panel' on the folded wing (fringes of great wing-coverts and inner secondaries): light greyish-brown in *mongalla*, greyish-ochre in *scotoptera*, greyish-white and buff in *ruficeps*, light tawny in *guinea*. Furthermore, though they show some buffy or rusty wash on their underparts, especially on the flanks, darker and more prominent on the thighs, they have a white vent.

Colouration

Compared to breeding specimens of these four subspecies, the three *dorsti* specimens show a number of subtle colour differences:

(1) they have buff not white under tail-coverts and vent, the colour extending onto the flanks. This pattern reduces the contrast between the thighs and the rest of the underparts.

(2) the black and white pattern on the undersurface of the tail-feathers is less sharply defined. The light tip is smaller (less than 4 mm in length on the vane; see Table 1) and does not appear so pure white, being greyish-white. The black subterminal spot is not so deep in tone and is reduced, in that it has the same length (=width, when considered as forming a subterminal band; see Table 1), but does not extend so much onto the feather webs. The differences in tail pattern between *dorsti* and the various subspecies of *C. ruficeps* are reminiscent of those found between *C. chiniana* and *C. bodessa* (Erard 1974).

(3) though light-coloured, the lores are not so white nor sharply contrasting on the sides of the face, which look more rusty than in all the others.

(4) cap and mantle appear more rusty and the upperparts more uniform, and this has the effect of making the fringes on the wing less conspicuous.

Measurements and proportions

Table 1 recapitulates the principal measurements of males in breeding dress belonging to the various subspecies of *C. ruficeps* and to *C. dorsti*.

We find no difference in bill and tarsus lengths, nor in the length of the subterminal black spot on the tail-feathers. Some minor differences do exist in wing length but they are statistically significant ($P<0.05$, two-tailed Mann-Whitney U test) only between (i) *ruficeps* and *guinea*, (ii) *mongalla* and *guinea*, and (iii) *mongalla* and *dorsti*.

On the other hand, striking differences appear in tail lengths and in the size of the apical white spot on the tail-feathers. Specimens of *dorsti* clearly have a longer tail (both absolute and relative lengths; see Table 1 and Figure 1) and a smaller white extremity on the tail-feathers than all the specimens of *ruficeps*.

In order to synthesize these biometrical data, we ran a principal component analysis (PCA) based on log-transformed data on wing, tail, bill and tarsus lengths, and on lengths of white tip and of black subapical spot on the outer tail-feathers. We used only the 36 specimens for which we had complete sets of data: 6 nominate *ruficeps*, 7 *mongalla*, 17 *guinea*, 3 *scotoptera* and the 3 *dorsti*.

Table 2 and Figure 2 give the results of this analysis. Clearly, tail length and pattern are important characters to distinguish *dorsti* from all subspecies of *C. ruficeps*.

TABLE 1

Measurements (in mm) of breeding males of the various subspecies of *Cisticola ruficeps* and of *C. dorsti* sp. n.

	N	Wing	Tail	Bill	Tarsus	White	Black
C. r. ruficeps	11	54.6 ± 2.2	38.1 ± 2.0	13.6 ± 0.4	20.3 ± 0.7	4.7 ± 0.5	3.8 ± 0.6
C. r. guinea	24	56.5 ± 1.5	39.6 ± 1.0	13.3 ± 0.6	20.5 ± 0.7	4.9 ± 0.4	3.8 ± 0.7
C. r. mongalla	9	54.2 ± 0.9	38.1 ± 1.1	13.2 ± 0.3	20.2 ± 0.5	5.5 ± 0.8	3.2 ± 0.6
C. r. scotoptera	4	55.7 ± 2.1	39.8 ± 1.1	13.6 ± 0.4	20.1 ± 0.7	6.2 ± 0.2	3.5 ± 0.0
C. dorsti	3	57.0 ± 0.5	43.0 ± 0.5	13.3 ± 0.5	21.3 ± 1.2	3.7 ± 0.5	3.7 ± 0.5

Note. For every entry mean ± standard deviation are given. 'White' and 'black' designate the width of the white apex and of the black subterminal band on the outer tail-feathers; N = 6 for *ruficeps*. 19 for *guinea*, 7 for *mongalla*, 3 for *scotoptera* and *dorsti*.

TABLE 2

Eigenvalues of principal components

Component number	Percent of variance	Cumulative percentage
1	64.87	64.87
2	29.22	94.09
3	2.28	96.37
4	1.86	98.23
5	1.47	99.70
6	0.30	100.00

TABLE 3

Discriminant analysis for the various subspecies of *Cisticola ruficeps* and *C. dorsti*

		Discriminant functions			
		1	2	3	4
Eigenvalue		3.58	0.65	0.46	0.08
Relative percentage		74.93	13.66	9.64	1.77
Canonical correlation		0.88	0.62	0.56	0.27
Standardized discriminant function coefficients	wing	0.28	0.92	0.92	0.40
	tail	−1.00	1.00	−0.03	−0.18
	bill	0.18	0.09	0.06	−0.65
	tarsus	−0.53	−0.40	0.08	0.57
	white	0.64	0.59	0.46	0.19
	black	0.34	−0.09	0.18	−0.49

Using the same sets of measurements, we performed a discriminant analysis (DA) (Table 3 and Figure 3), from which it can be concluded that specimens of *dorsti* are biometrically separate from all the others.

Other PCAs and DAs suggest that the multivariate distinction between *dorsti* and the others may be much clearer if one considers specimens from Nigeria, Cameroon and Chad, that is from the potential area of

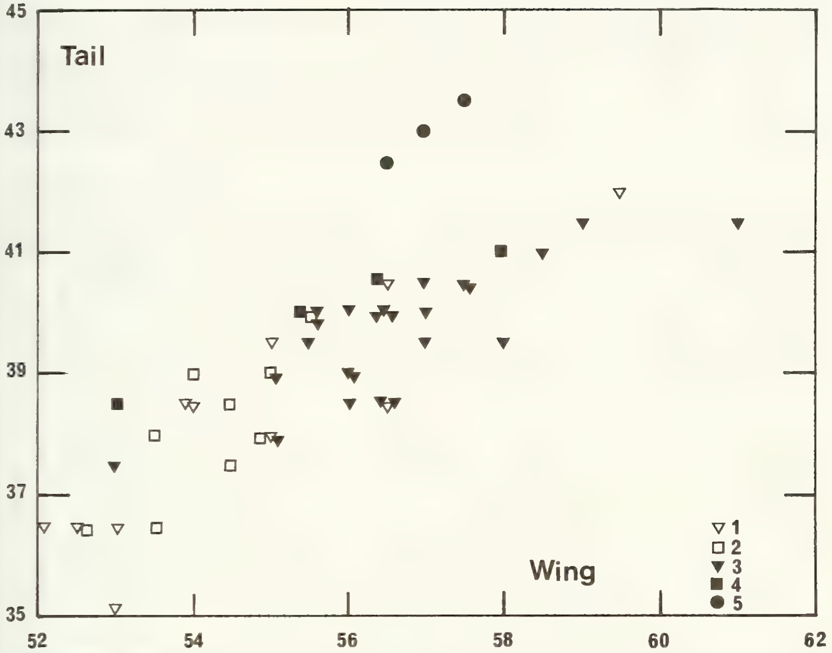


Figure 1. Plot of tail versus wing for breeding males of the various subspecies of *Cisticola ruficeps* and *C. dorsti*. Measurements are in mm. 1 = *C. r. ruficeps*, 2 = *C. r. mongalla*, 3 = *C. r. guinea*, 4 = *C. r. scotoptera*, 5 = *C. dorsti*.

sympatry of *dorsti* with either *guinea* or nominate *ruficeps*. The results of this second series of analyses are based only on the 12 specimens for which we had a complete set of the measurements quoted above. They require confirmation based on a larger number of specimens.

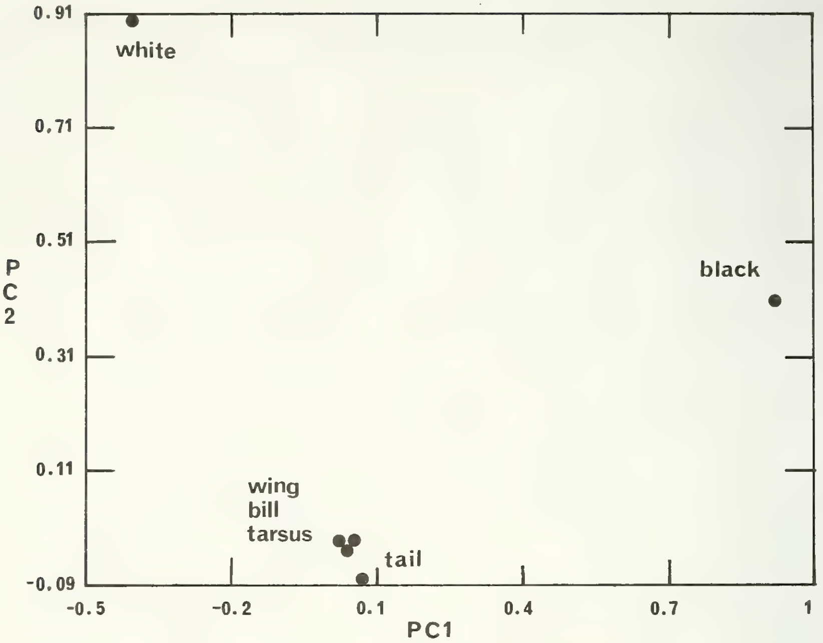
Bioacoustic analysis

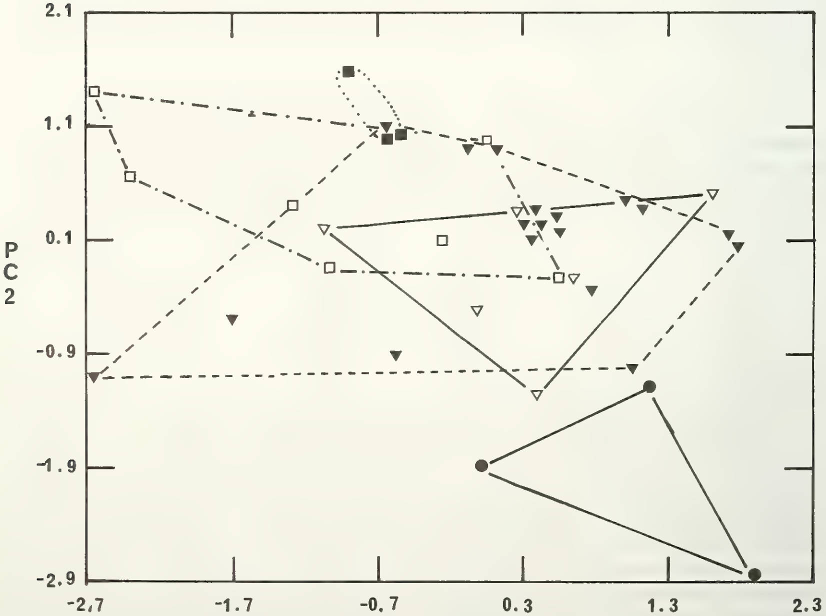
Cisticola ruficeps

(1) Song

Generally, a singing bout includes two song-types (A and B) in succession. A-songs consist of a long note slowly modulated in frequency (sometimes replaced by a short vibrant note of a complex tonal structure) introducing a phrase of a progressively falling overall tonality. This phrase consists of alternatively rising and falling notes. A-songs vary in length from 0.55 to 1.1 sec (Fig. 4A). They are regularly repeated, then replaced by B-songs.

B-songs also are phrases consisting of the same kind of notes as in A-songs but their overall tonality rises, they rarely begin with an isolated note (Fig. 4B), and last 0.4 to 0.8 sec.


0.91
0.71
0.51
0.31
0.11
-0.09
PC2
white
black
wing
bill
tarsus
tail
-0.5
-0.2
0.1
0.4
0.7
1
PC1


2.1
1.1
0.1
-0.9
-1.9
-2.9
PC2
-2.7
-1.7
-0.7
0.3
1.3
2.3

These two song-types sound quite different. A-songs are roughly reminiscent of some whistles of *Dendrocygna viduata*. B-songs are similar to some phrases of *Cisticola cinereola* or *C. lateralis*.

As far as pitch is concerned, *C. ruficeps* uses frequencies of 4–5 kHz for territorial advertising, but 5.5–6 kHz in conflict situations.

(2) Call-notes

Most are notes with a sharply and rapidly modulated frequency. Figure 4D illustrates an extreme case of variation from 1 to 8 kHz in 25 milliseconds. These notes are grouped either in so rapid a rhythm that they sound like buzzes (Fig. 4E), or in a slower rhythm sounding like rattles (Fig. 4F); but they may also be grouped so as to constitute a regularly repeated motif (Fig. 4D). There is also a long weakly modulated call-note which is in fact the note usually introducing the A-song type (Fig. 4C).

Cisticola dorsti

Though descriptions presented here are based on sonagraphic analysis of only two individuals, our impression that vocalisations of *C. dorsti* are less rich and varied than those of *C. ruficeps* is also based on a series of other individuals heard in the field, and in some cases tape-recorded (but unsuitable for spectrographic analysis).

(1) Song

There is only one type: a monotonous trill often introduced by a short vibrant note and followed by a regular repetition (4–6 times) of a simple motif, emphasized at the end and falling in pitch (Fig. 5B). The introductory note (Fig. 5A) is analogous to the corresponding note of *C. ruficeps* (Fig. 4B), and is practically the only acoustic signal common to both species.

The trill can be emitted with two different rhythms: a slow one of 10 motifs per sec (Fig. 5A), and a rapid one of 14.7–17.5 motifs per sec (Fig. 5B), used during territorial conflict. The mean pitch is the same for trills of both rhythms, in contrast to *C. ruficeps* which, as mentioned above, uses different frequencies in different behavioural contexts.

(2) Call-notes

The commonest call-note we heard was emitted in conflict situations. It is a long, high-pitched and falling note, slowly modulated in frequency (Fig. 5C), whereas the analogous note of *C. ruficeps* is a rising one (Fig. 4C), scarcely used as a distinct call.

Only once did we hear a repeated motif, made up of notes sharply and rapidly modulated from 3.5 to 8.5 kHz (Fig. 5D), analogous to *C. ruficeps* motifs (Fig. 4D).

Figure 2. Principal component analysis (PC1 × PC2) based on measurements of breeding males of the various subspecies of *Cisticola ruficeps* and *C. dorsti*. Lengths of wing, tail, bill and tarsus were used, along with width of the white apical and black subterminal bands on the outer tail-feathers (log-transformed data). Upper graph: variables placed according to their eigenvalues on the first two principal components. Lower graph: location of the individuals. For symbols, see Fig. 1.

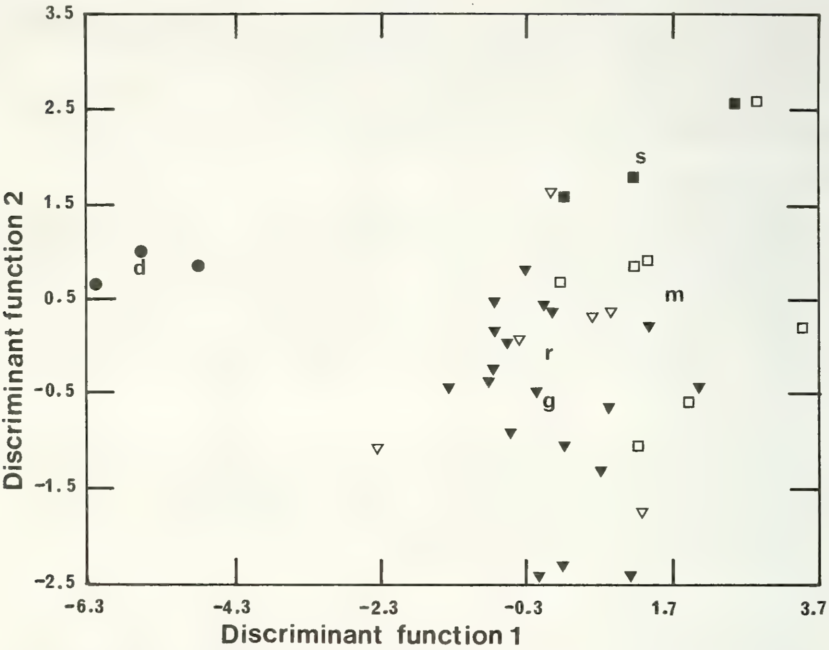


Figure 3. Discriminant analysis for the breeding males of the various subspecies of *Cisticola ruficeps* and *C. dorsti*. Letters locate the group centroids for: d = *C. dorsti*, g = *C. r. guinea*, m = *C. r. mongalla*, r = *C. r. ruficeps*, s = *C. r. scotoptera*. For symbols, see Fig. 1.

Conclusion

In spite of a thorough analysis of the material we have on hand, we find almost no common element to both *C. ruficeps* and *C. dorsti*. This was indeed the impression we had in the field. It may be rather surprising that these two morphologically very similar birds are acoustically so different, so one might be tempted to see in this situation the indication of a rather ancient evolutionary divergence.

Habitat

Many authors (e.g. Lynes 1930, Elgood 1982) consider that *Cisticola ruficeps* is a bird of grassy thorn-scrub, or grassy open areas with scattered trees or bushes. So it is interesting to note here that in our experience, two distinct species were suspected in the field not only because two separate vocal repertoires were heard but also (and perhaps especially) because these acoustical differences were associated with different habitat preferences.

Short-phrase songs were emitted by birds perched 5–8 m above ground, on top of small trees scattered among poor grasslands on sandy ground, with scanty bushes, i.e. a sahel-like landscape. These birds were *ruficeps*, which in this habitat lives alongside the Desert Cisticola *C.*

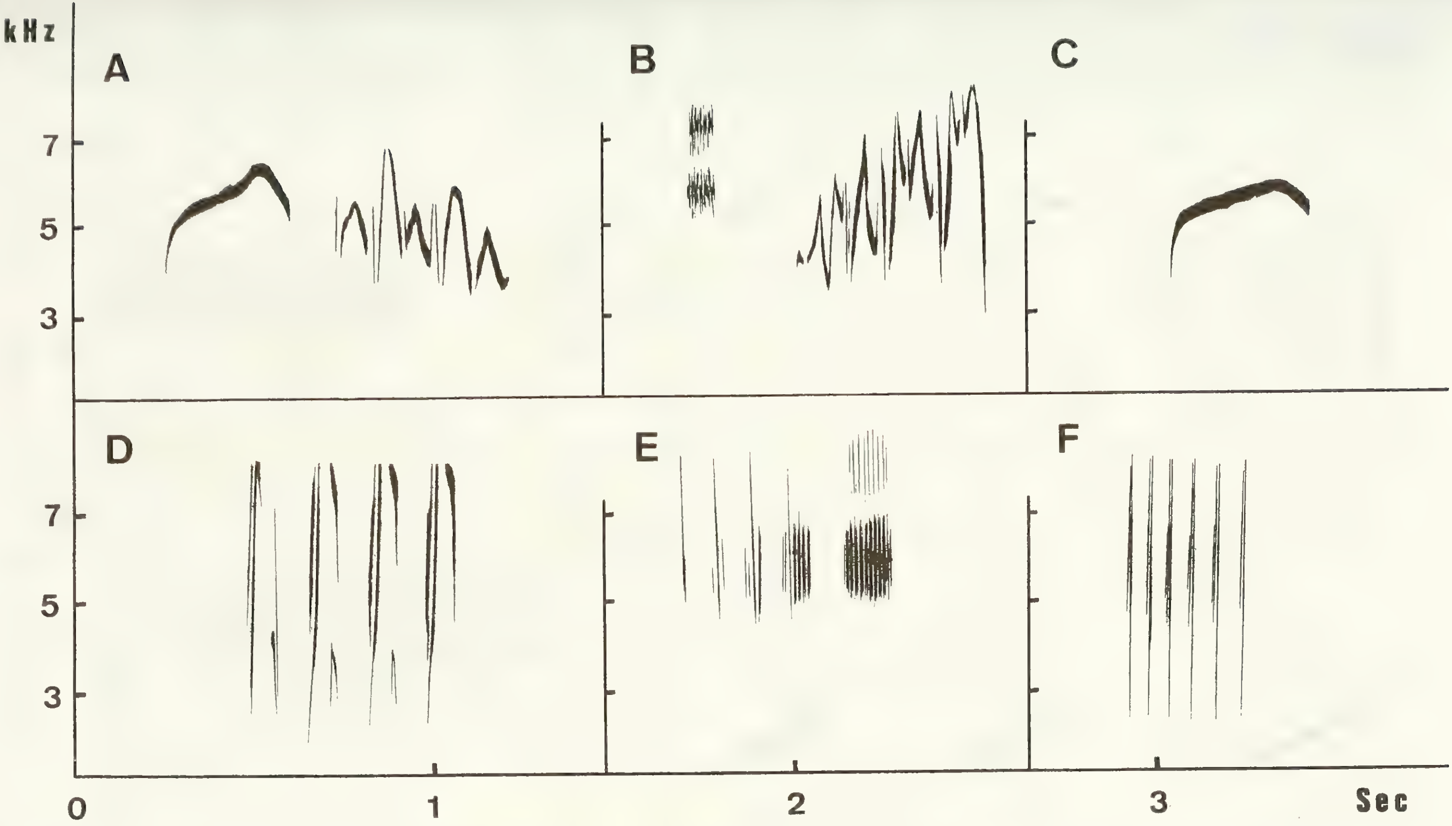


Figure 4. *Cisticola ruficeps*. Sonagrams from recordings by C. Chappuis (wide band filter, 300 Hz). A: A-song type with phrases falling in pitch. B: B-song type with phrases rising in pitch (here the high frequencies indicate an aggressive behaviour). C, D, E and F: four types of call-notes.

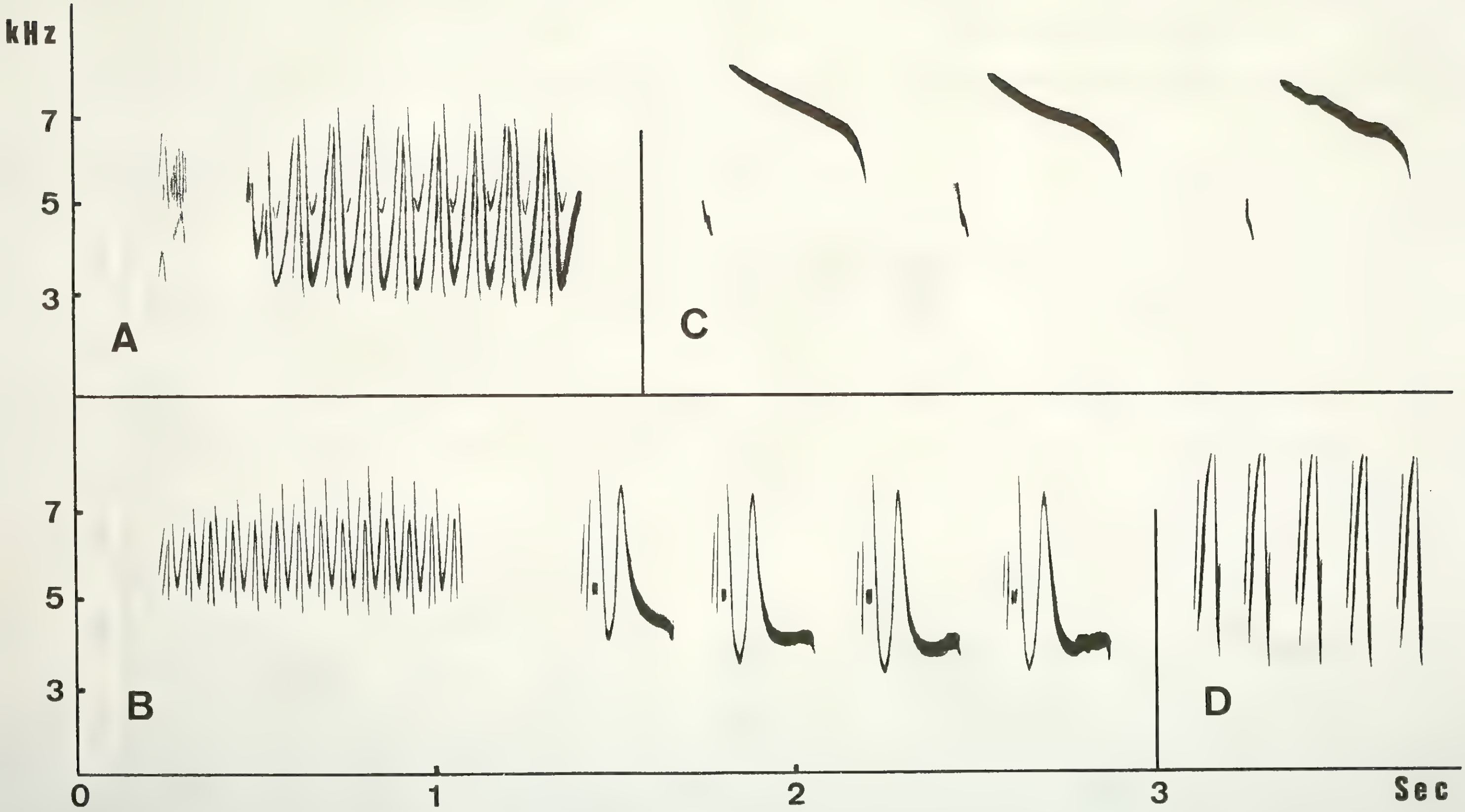


Figure 5. *Cisticola dorsti*. A: song with slow rhythm. B: song with fast rhythm. C and D: two types of call-notes.

aridula, another species favouring this type of environment and a possible ecological competitor.

On the other hand, trill-songs (i.e. *dorsti* songs) were emitted by birds perched 1–2 m above ground on top of stems or small bushes in grass steppe with clumps of thicket or even an important shrub layer; cassava plantations or old-fields are also inhabited by *dorsti*.

In fact, this simultaneous duality of songs and habitats could have been discerned in some previous descriptions, for instance in Mackworth-Praed & Grant (1973: 349).

Distribution

At present, the acoustically peculiar *C. dorsti* is known from north-western Nigeria around Gusau (12°12′N, 6°40′E), from northern Cameroon near Mokolo (10°49′N, 13°54′E), in the Kapsiki range, and from southern Chad around Bekao (7°51′N, 15°58′E) and Baïbokoum (7°46′N, 15°43′E). All these records were obtained in May and June 1972.

In the same areas and at the same time, birds with typical *C. ruficeps* songs were recorded in northeastern Nigeria at Maiduguri (11°53′N, 13°16′E), in northern Cameroon at Mora (11°02′N, 14°07′E), a locality also in the Kapsiki range but at a lower altitude than *dorsti*, and in southern Chad north of N'Djamena (12°10′N, 14°59′E) and Moundou (8°35′N, 16°01′E). A specimen from Mora is *C. r. guinea*, others from the latter two Chadian localities are respectively nominate *ruficeps* and *guinea*.

We have also examined breeding specimens of *guinea* from Nigeria (Maiduguri area, Kafanchan and Jos plateau), northern Cameroon (Koza, Maroua, south of Garoua) and southern Chad (between N'Djamena, formerly Fort Lamy, and Sahr, formerly Fort Archambault).

Thus *dorsti* and *guinea* can be considered as sympatric though they have not yet been found side by side. A more detailed altitudinal analysis of their distribution would be most useful.

Conclusion

These analyses led us to conclude that *C. dorsti*, being acoustically and morphologically peculiar, constitutes a single species distinct from *C. ruficeps*.

We dedicate this species to Professor Jean Dorst, Membre de l'Institut, past Director of the Muséum National d'Histoire Naturelle, who headed the Laboratoire de Zoologie (Mammifères et Oiseaux) for almost thirty years.

Diagnosis. Very similar to the Red-pate Cisticola *Cisticola ruficeps* (Cretzschmar) from which it can be distinguished by its buff vent and under tail-coverts, and its longer tail, with a greyer, less white, and narrower terminal band on the under-surface of the tail-feathers. In the present state of knowledge, the diagnosis is only applicable to birds in breeding dress. The non-breeding plumage, if present, remains to be studied.

Type. Male, tape-recorded and collected near Mokolo (10°49′N, 13°54′E), northern Cameroon, 7 June 1972, by C. Chappuis. Deposited in Muséum National d'Histoire Naturelle, Paris (C.G. 1977–58).

Measurements of type. Wing 56.5 mm, tail 42.5 mm, bill 13 mm, tarsus 21.5 mm.

Original series. The type plus two other males from southern Chad, one from Baïbokoum, tape-recorded and collected by C. Chappuis, 13 June 1972 (C.G. 1979–649), one from Bekao, collected by J. Vielliard, 2 August 1970 (C.G. 1972–79).

Acknowledgements

We are grateful to the curators who provided all facilities to examine the collections at the American Museum of Natural History in New York, the British Museum (Natural History) in Tring, the Field Museum of Natural History in Chicago, the Institut Royal des Sciences Naturelles de Belgique in Bruxelles, the Koninklijk Museum voor Midden-Africa in Tervuren, and the National Museum of Natural History (Smithsonian Institution) in Washington. The work of C. Erard in the U.S. museums was possible thanks to a grant from the Chapman Fund of the American Museum of Natural History.

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Breeding seabirds of Rapa (Polynesia): numbers and changes during the 20th century

by Jean-Claude Thibault & Albert Varney

Received 13 September 1990

The island of Rapa and its satellite islets, situated in the subtropical zone, have an assemblage of breeding seabirds that differs from the rest of

Polynesia in the following ways: the absence of *Sula* spp. and *Sterna fuscata*, and the predominance of petrels (7 of the 11 species; Garnett 1984, Holyoak & Thibault 1984). There are two endemic forms, *Puffinus assimilis myrtae* and *Fregetta grallaria titan*. Of all the other South Pacific archipelagos, Rapa is most similar to the Kermadec Islands (New Zealand) (41% species in common: Robertson & Bell 1984, this study). Here we present new data on the distribution and numbers of breeding seabirds, and a comparison between today and the situation during the first part of the century, based on the results of the Whitney South Sea Expedition (WSSE), 1920–35.

Rapa (27°37′S,144°20′W), Austral Islands, has an area of 40 km² and reaches a height of 650 m. Politically part of French Polynesia, it is remote, 480 km from the closest island (Raivavae). It is surrounded by high and steep rocky coasts. There are 10 satellite islets (Fig. 1), the smallest measuring less than 1 hectare and the largest about 26 hectares. Table 1 presents information on the animals that have been introduced.

There was considerable human influence in the past, as can be seen by the effects on plant life: cultivation (*Xanthosoma sagittifolium* on Tarakoi), land-clearing (remains of a grove of *Metrosideros collina* on Tauturou) and plants introduced by man. Today, only Karapoo rahi has an important grove of *Pandanus tectorius* which should be protected (Paulay 1982).

Historical information comes mainly from Ernest Quayle's journal, written during the Whitney South Sea Expedition to Rapa from 14 to 20 April 1921 and from 15 to 26 February 1922 (Bryan, MS). J.-C. Thibault was there from 15 October to 17 December 1974, and J.-C. Thibault and A. Varney between 18 December 1989 and 6 January 1990.

Diurnal seabird numbers were estimated by counting nests with egg or chick, and the total adult population on the site. Nocturnal or burrowing petrels (*Fregetta grallaria* on Tarakoi Islet, and *Pterodroma nigripennis* on Tauturou Islet) were estimated by counting the occupied nests in plots (3 of 728 m² for *F. grallaria* and 10 of 100 m² for *P. nigripennis*). The number of breeding pairs was then estimated on the basis of the total area available for the birds (Table 2).

Systematic list

KERMADEC PETREL *Pterodroma neglecta*

Breeds on certain cliffs on the main island (Makatea, Tevaiputa), and on rocky faces and slopes inland (Haurei, Pukumaru, Mauroa, Perau). There were no more than a few dozen pairs. On the islets: breeds on Rapa iti (2–3 p.), Tauturou (7–10 p.), Karapoo iti (10–20 p.), Karapoo rahi (100–500 p.). Total population was estimated at less than 1000 pairs.

MURPHY'S PETREL *Pterodroma ultima*

Breeds exclusively on a limited number of islets (Rapa iti, Tauturou, Tapiko, Karapoo rahi and Karapoo iti). Population was estimated at 10–99 pairs.

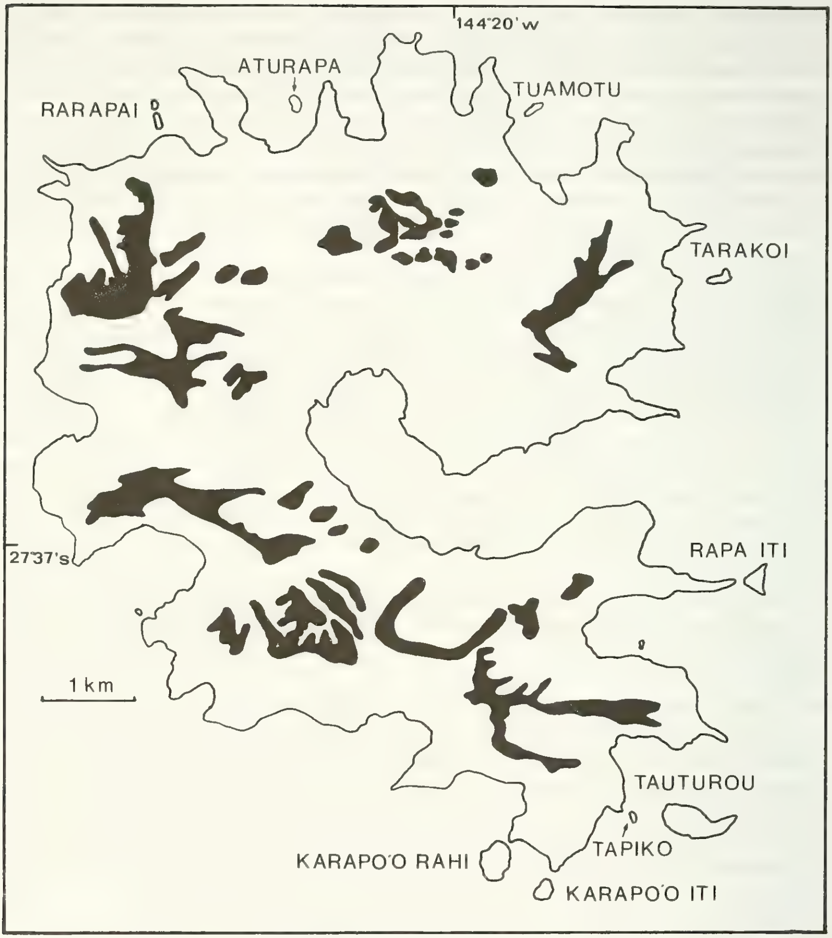
144°20' W
ATURAPA
RARAPAI
TUAMOTU
TARAKOI
27°37' S
RAPA ITI
1 km
TAUTUROU
TAPIKO
KARAPO'O RAHI
KARAPO'O ITI

Figure 1. Rapa and its islets.

BLACK-WINGED PETREL *Pterodroma nigripennis*

In 1974, bred on Rapa iti and Tauturou (population estimated at 200–300 pairs). In 1989, a more precise count, at a better time of year, gave an estimate for the colony on Rapa iti around 34–50 p., and on Tauturou of 657 p. (185–1645, 95% confidence limits).

CHRISTMAS SHEARWATER *Puffinus nativitatis*

Breeds on Tarakoi (5–10 p.), Karapoo iti (>100 p.), Karapoo rahi (>10 p.) and perhaps a few pairs on Tauturou.

LITTLE SHEARWATER *Puffinus assimilis*

In 1974, bred on Tauturou (200–300 p.) Rapa iti (40–50 p.), Karapoo iti (15–20 p.) and Karapoo rahi (<10 p.). Absent from breeding locality

TABLE 1
Introduced animals on Rapa and its islets

Island	Area (ha)	*Rattus exulans*	*Oryctolagus cuniculus*	*Capra hircus*	*Felis catus*	Number of seabird species breeding
Rapa	>4000	P	—	5–6000**	P	5–7
Rapa iti	±3.5	P	—	23***	—	8–9
Tauturou	26	P	P*	—	—	8
Tapiko	<1	—	—	—	—	3–5
Karapoo iti	<2	—	—	—	—	8–9
Karapoo rahi	±6	P	—	1	—	7
Rarapai	<2	—	—	—	—	5
Atuarapa	<2	?	—	6***	—	0
Tuamoto	<1	?	—	—	—	0
Tarakoi	<2	—	—	5***	—	6

*present in 1922 (Quayle, MS), perhaps extinct recently, but seen in 1988.
**Marc Liblin, pers. comm. 1989.
***pers. obs., 1989.
P present.
? unknown.
— absent.

during the 1989 visit. Should be looked for breeding at the foot of cliffs inland on the main island (Haurei).

WHITE-BELLIED STORM-PETREL *Fregetta grallaria*

Its status is being currently revised (Bretagnolle & Thibault, unpub. MS). Breeds on Tarakoi (1989: 357 occupied nests; 288–412, confidence limits 95%), Rapa iti (1 ex. in 1974 and 1 ex. in 1989), Tapiko (10–50 p.), Karapoo iti (found in 1974 and 1989, but no count was done due to difficult access) and Rarapai (10–99 p.).

WHITE-THROATED STORM-PETREL *Nesofregetta fuliginosa*

Breeds on Rarapai (25–99 p.), Tarakoi (10–99 p.), perhaps Tapiko and Karapoo iti (some seen in flight, but no count).

RED-TAILED TROPICBIRD *Phaethon rubricauda*

Breeds (several hundred pairs) on the main island on all the big cliffs and in certain inland areas (Ahurei, Anarua). Also breeds on Tarakoi (8–15 p.), Rarapai (5 p.), Rapa iti (5–10 p.), Karapoo iti (5–10 p.), and Karapoo rahi (10–30 p.). Population was estimated at about 1000 pairs.

BLUE-GREY NODDY *Procelsterna cerulea*

A few dozen pairs breed on the cliffs of the main island (Makatea, Rukuaga), inland (Ahurei), and on the islets: Tarakoi (100–500 p.), Tauturou (>10 p.), Rarapai (>50 p.), Rapa iti (>50 p.) and Karapoo iti (50–99 p.). Population was estimated at 1000–2000 pairs.

TABLE 2
Numbers of breeding seabirds on Rapa and its islets (expressed in pairs)

Island	*Pterodroma neglecta*	*Pterodroma ultima*	*Pterodroma nigripennis*	*Puffinus nativitatis*	*Puffinus assimilis*
Rapa	several dozens	—	—	?	?
Rapa iti	2–3	P	34–50	—	40–50
Tauturou	7–10	P	657 (185–1645)	several	200–300
Tapiko	—	P	—	—	—
Karapoo iti	10–20	P	—	>100	15–20
Karapoo rahi	100–500	P	—	>10	<10
Rarapai	—	—	—	—	—
Tuamotu	—	—	—	—	—
Tarakoi	—	—	—	5–9	—
Totals	B3	B2	B3	B3	B3

Island	*Fregetta grallaria*	*Nesofregetta fuliginosa*	*Phaethon rubricauda*	*Procelsterna cerulea*	*Anous stolidus*	*Gygis alba*
Rapa	—	—	several hundred	several dozens	P	P
Rapa iti	?	—	5–10	>50	20–50	<15
Tauturou	—	—	—	>10	20–50	60–80
Tapiko	10–50	?	—	?	20–25	—
Karapoo iti	P	?	5–10	50–100	100–200	—
Karapoo rahi	—	—	10–30	—	10–99	100–999
Rarapai	10–99	25–99	5	>50	80–100	—
Tuamotu	—	—	—	—	—	—
Tarakoi	357 (288–412)	10–99	8–15	100–500	50–100	—
Totals	B3	B3	B3	B4	B4	B4

B2 population estimated at 10–99 pairs.
B3 population estimated at 100–999 pairs.
B4 population estimated at 1000–9999 pairs.
P present.

BROWN NODDY *Anous stolidus*

Breeds in limited numbers on cliffs on the main island. On the islets, breeds on Tarakoi (50–99 p.), Rarapai (80–99 p.), Rapa iti (20–50 p.), Tauturou (20–50 p.), Karapoo iti (100–200 p.), Karapoo rahi (10–99 p.) and Tapiko (20–25 p.). Population was estimated at 1000–2000 pairs.

FAIRY TERN *Gygis alba*

Breeds on the main island (rocky faces of Ahurei: 20–30 p.) and a very limited number in the inland forests, except in one locality (Maii) where it is relatively numerous. On the islets: Tauturou (60–80 p.), Karapoo rahi (100–999 p.) and Rapa iti (<15 p.). Population was estimated at 1000–2000 pairs.

Discussion

Trends in diversity

Two species found today were not mentioned by the Whitney South Sea Expedition in 1921–22. *Nesofregetta fuliginosa* has a seasonal breeding period below this latitude (Rapa, Gambier) lasting from the beginning of summer until the beginning of the southern winter (Lacan & Mougin 1974, Holyoak & Thibault 1984), which suggests that the species may have been absent during the visit of the WSSE. It was discovered in October 1974 (Holyoak & Thibault 1984). Secondly, *Pterodroma nigripennis* was probably absent from Rapa at the beginning of the century. Its breeding is also seasonal and the WSSE took place during the chick-rearing season. The WSSE searched in vain for the "blue shearwater" on Rapa and the islets, including the two islets where the species nests today (Quayle, MS). In April 1925, Kelsall did not find any either, although he found an example of *Puffinus assimilis*, a species which breeds in the same sites as *P. nigripennis*. In his list compiled during the 1920s, Stokes did not mention its Polynesian name (*titi*), although he cited other seabirds' names (Stokes & Marshall 1955); this indicates that the inhabitants of Rapa did not know the species well enough to give it a name. However, near Marotiri (=Bass I.), situated 83 km south of Rapa, the WSSE collected three specimens and said that the species was "plentiful". Found breeding in 1974 (Holyoak & Thibault 1984), it seems that the species colonized Rapa during the 20th century, during which period it expanded in the South Pacific (Imber 1985).

Trends in population numbers

A careful reading of the information in the WSSE's journals, compared to the data gathered in 1974 and 1989, indicates no real decrease in the population of any species between 1922 and 1989, except for *Gygis alba*, which Quayle said was numerous in wooded ravines, although this was not confirmed in 1974 and 1989. It may have been preyed upon by feral cats, although these were already present at the time of the WSSE (Quayle, MS).

While chicks of some petrels (*Pterodroma neglecta, P. ultima, Puffinus nativitatis*) were taken for food at the beginning of the century and up until 1970, they are not eaten today, thanks to a better standard of living and the availability of imported food (e.g. frozen chickens). Actually, the WSSE found very few *P. neglecta* on the breeding sites despite the fact that their visit corresponded to the chick-rearing season. Quayle (MS) found remains of fires with burned petrel bones. Thus the change in human activities may have been beneficial to the petrel populations.

Feral cat and rat predation

Rattus exulans is found on the main island and most of the islets, with the exception of Rarapai, Tarakoi, Tapiko and Karapoo iti, and seems to have an adverse impact on the seabirds (Moors & Atkinson 1984), especially smaller species. It is relevant to note that the four islets mentioned above are the only ones where many storm-petrels are found breeding. It seems probable that the chicks are preyed upon or that the adults are occasionally disturbed by the rats, a general situation in Eastern Polynesia (Gambier, Marquesas; pers. obs.).

Cats were introduced on the main island at an unknown date. Quayle (MS) noted their presence during his visit. The decrease of the *Gygis alba* population on the main island could be due to cats, and their presence could equally explain why *P. neglecta*'s nests are situated on inaccessible cliffs (cf. their situation on islets, where they nest on flat ground).

Influence of goats on the islets

Goats disturb the breeding seabirds, but more importantly, their presence leads to over-grazing, which in certain areas, e.g. Tauturou, causes soil erosion (see Trichet *et al.* 1986 for Rapa, Daly & Goriup 1987 for the general situation on the islets), creating poor conditions in the long run for the petrels which breed in burrows. The largest colony of *P. neglecta* is found on the only islet (Karapoo rahi) where there is an important grove of *Pandanus tectorius*, and the petrels often breed at their base. Elsewhere (e.g. Tauturou) exotic species (e.g. Guava *Psidium cattleanium*, a goat refuse) took advantage of other plants which were eliminated. However the development of the Guava on this islet did not affect *P. nigripennis*, which dig holes under their covering.

After comparing information on the seabird populations at the beginning and the end of the 20th century, it appears that the general situation, while improved, is still precarious, since the most abundant species are still not very numerous. Various conservation measures (classifying the islets as nature reserves, eliminating the goats) have been suggested to the authorities.

The seabird population of the Marotiri islets (83 km south of Rapa) has been insufficiently surveyed, but it is probably similar to that on Rapa (Quayle MS, Fosberg 1972). These islets are rarely visited and landing is especially difficult, which suggests that the birds are well 'protected'. However, as the extent of flat areas is less than 10 ha, the number of breeding birds is probably not large. Thus particular attention should be paid to the bird population, and especially to the two endemic forms, on Rapa and its satellite islets.

Acknowledgements

This work was accomplished for the Polynesian Ministry of Health, Scientific Research and Environment (FIRST no. 90/0008). We express our thanks to Claude Monnet and Philippe Siu for their help and encouragement in the organization of the expedition, to Lionel Watanabé, Mayor of Rapa, for his welcome, to Dr Vincent Bretagnolle who improved the MS with his criticisms and to Dr Jean-Louis Martin (AMNH, New York) who kindly made available the information concerning the Whitney South Sea Expedition to Rapa.

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New and noteworthy bird records from Petén, Guatemala, including Tikal National Park

by Randell A. Beavers, Dale J. Delaney, Christopher W. Leahy & G. Frank Oatman

Received 31 August 1990

The inaccessible nature of the Department of Petén, Guatemala, has undoubtedly played a role in the limited amount of ornithological exploration in the region. Distribution records on the birds of Petén have been given by Moore (1859), Sclater & Salvin (1859), Sclater (1860, 1886), Salvin (1863, 1866), Salvin & Godman (1879–1904), Ogilvie-Grant (1893), Lantz (1899), Ridgway (1901–1950), Griscom (1932), Van Tyne (1935), Taibel (1955), Edwards (1959), Smithe & Land (1960), Smithe & Paynter (1963), Smithe (1966), Land (1970), Eisenmann (1971), Brodkin & Brodkin (1981), Ellis & Whaley (1981), and Wendelken & Martin (1986); and there are unpublished specimen records from the 1962 *Milwaukee Journal*/Milwaukee Public Museum expedition. From these sources, a total of 381 species of birds have been recorded from this Department, of which approximately 294 were found in Tikal National Park.

During the course of an ongoing project to compile all historical and recent field records for *An Annotated Checklist of Birds of Petén, Guatemala,* new information on the distribution and occurrence of 73 species of birds has been accumulated. Presented here are 3 records new for Guatemala and at least 35 records new for Petén (bringing the number of species reported from this Department to 416), and 60 records new for Tikal (bringing the total species reported from this park to at least 354). New migratory arrival/departure records, seasonal records and range extensions in Petén are too numerous to report here. These data will be presented in subsequent publications.

Data in this report are based primarily on reliable sight records supported by photographs, sound recordings and/or detailed observation notes provided by various individuals noted herein. Original records from The Peregrine Fund's raptor censusing project, discussed in Burnham *et al.* (1988, 1989), are also incorporated. In all, over 5000 man-hours of observation records were accumulated between March 1967 and October 1990, mostly (nearly 4000 man-hours) during the last 4 years.

Field work was conducted primarily in the central regions of Petén, a transitional zone between the Tropical Dry Forest and Tropical Moist Forest as described by Holdridge (1967). To the north, on the Yucatán Peninsula, the tall forest gradually yields to a scrub forest as the climate becomes drier. To the south, in the Caribbean Lowland, the rainfall increases and the forest becomes more evergreen, stratified and diverse. In central Petén, much of the primary forests has been modified over the years by slash-and-burn and clear-cutting practices. However, healthy primary forests remain intact within the protected confines of Tikal National Park. Areas of concentrated study included the Lago Petén-Itzá region and the surrounding towns and villages; the adjoining roads and roadsides from the lake area southwest towards La Libertad which consists of open savannah with few trees, thickets and seasonal bajos, south towards Santa Ana dominated by hilly fragmented forests with clearings and thickets in the lower areas, east towards Belize containing extensive clearings with scattered trees and a few remnant riparian woodlands associated with intermittent streams, and north to the entrance of Tikal National Park with large cleared areas, scattered woodlands, second growth forests, thickets and several villages; all of Tikal National Park dominated by tall forests, scattered low forests and some disturbed, open areas, and north along the road to Uaxactún with habitats similar to Tikal. Both permanent and temporary aguadas (small ponds) exist throughout the region. Records from more remote areas of Petén, such as west of Lago Petén-Itzá and north of Uaxactún, are also presented in this report (see Fig. 1).

The nomenclature and sequence used in the species accounts follow that of the American Ornithologists' Union (1983, 1985, 1987, 1989). After a summary of the historical records, we give the new distributional data, including observation date(s), locality(s), observer(s) and the type of record each represents, and any additional relevant records. Since the status of the species dealt with here is thought to have changed significantly in the Petén from that assigned by Smithe (1966) and/or Land (1970), a revised current status is also provided. Nine species presented

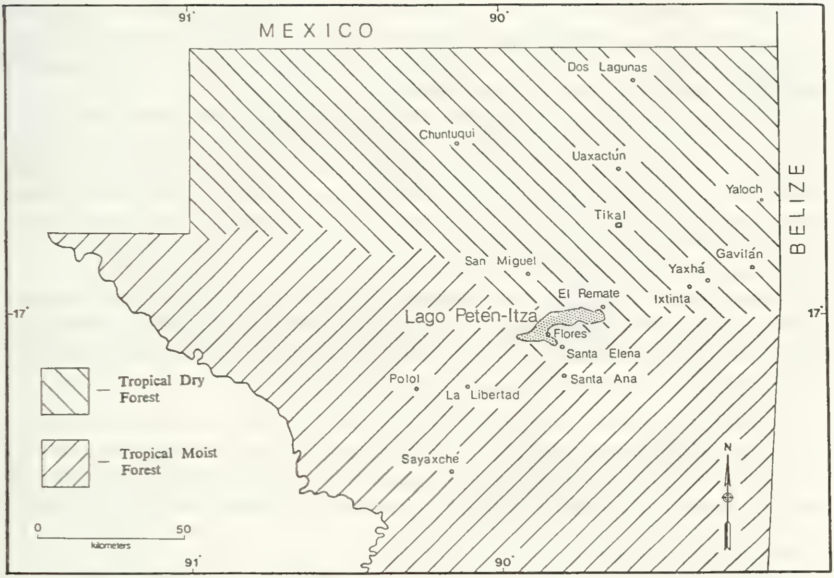
MEXICO
BELIZE
91°
90°
17°
Dos Lagunas
Chuntuqui
Uaxactún
Yaloch
Tikal
Gavilán
San Miguel
Yaxhá
El Remate
Ixtinta
Lago Petén-Itzá
Flores
Santa Elena
Santa Ana
Polol
La Libertad
Sayaxché
Tropical Dry Forest
Tropical Moist Forest
0
50
kilometers
N

Figure 1. Localities in Central Petén.

here might be considered hypothetical in Petén and need further documentation to confirm their occurrence. The status of these species is listed as 'uncertain'. Species assigned to the status of 'visitor' are ones that breed outside of the study area and are not thought to occur regularly (annually) as transients or winter residents. Avian distributional areas used in this account generally follow those used by Land (1970).

The following abbreviations are incorporated in the species accounts for frequently cited localities and records: Localities—ER = El Remate, Fl = Fores, Guat = Guatemala, LPI = Lago Petén-Itzá, rd = road, LL = La Libertad, SA = Santa Ana, STE = Santa Elena, and Tikal = Tikal National Park; Type of record—**NG** = new record for Guatemala, **NP** = new record for Petén, **NT** = new record for Tikal National Park. The observers responsible for new records are indicated by their initials, their names being listed under Acknowledgements. Many other observers were responsible for additional records noted in the species accounts. The authors' initials are also incorporated where appropriate (RB = Randy Beavers, DD = Dale Delaney, CL = Christopher Leahy and FO = Frank Oatman).

Species accounts

THICKET TINAMOU *Crypturellus cinnamomeus*

Known throughout N Petén, including nearby Uaxactún and Chuntuqui (Van Tyne 1935, Taibel 1955, Land 1970), but no Tikal records have been reported. 30 Oct 84 at Tikal (2 seen) by SNGH—**NT**;

numerous additional reports of hearing this species at Tikal 1986–90. Current status: probable local resident, both inside and outside of Tikal.

BROWN PELICAN *Pelecanus occidentalis*

Previously known in Petén from one record in 1968 (month?) at Yaxhá (Land 1970). 12 Jun 77 at Tikal by RAR—**NT**; additional sightings at Tikal on 17 Feb 89, at LPI in Mar 78, Feb 88, Feb and Sep 89, and along rd between ER and Tikal on 28 Feb 88. Current status: visitor over Tikal; more common at LPI.

LEAST BITTERN *Ixobrychus exilis*

Land (1970) indicates this species is rare in the Petén, and no park records have been reported. 6 June 1957 at Tikal by EE—**NT**; additional sightings at Tikal in Jan 1977. Current status: visitor; possible local resident.

WHITE IBIS *Eudocimus albus*

Previous occurrence of this species in Petén is unclear (see Land 1970). 13 Apr 90 at Dos Lagunas N of Uaxactún by JV—possible **NP**. Current status: visitor; possible local resident in low, wet areas outside of Tikal.

JABIRU *Jabiru mycteria*

Previously known in Petén only from SW region (Land 1970). 7 Feb 78 at Tikal by FO—**NT**; additional sightings at Tikal on 2 Jan 89, 4 Jan 90 and 2 Mar 90, at LPI on 13–16 Aug 76, and at Sayaxché on 10 Feb 78. Current status: visitor at Tikal; possible resident in remote bajos outside of Tikal.

LESSER YELLOW-HEADED VULTURE *Cathartes burrovianus*

Not previously recorded from Guat, but known from the Yucatán Peninsula and Belize (Russell 1964, Ornat *et al.* 1989). 10 Jan 70 N of San Jose in the Department of Escuintla (and regular occurrence thereafter) by PA—**NG**; 20 Mar 78 at LPI by CL—**NP**; additional sighting at LPI on 19 Mar 80, and occasional reports from the Caribbean Lowlands. Current status: visitor outside of Tikal.

OSPREY *Pandion haliaetus*

Previously known in Petén only from S region (Land 1970). 18 Apr 88 at Tikal by RT—**NT**; additional sightings at Tikal on 14 Feb and 16 Apr 89, and at LPI on 13–16 Aug 74, 18 Feb 75 and 7–15 Feb 88. Current status: visitor; possible rare but regular transient and winter resident.

GRAY-HEADED KITE *Leptodon cayanensis*

Previously known in Guat only from the Pacific Lowlands and Foothills of the western Highlands (Land 1970, Griscom 1932, Vannini 1989b). 4 Dec 75 on rd between LL and Sayaxché by RR—**NP**; 27 Feb 88 at Tikal by FO, BW—**NT**; additional sightings at Tikal on 15 Jun 88, 15 and 23 Feb 89, 27 Feb and 1 Mar 90, along rd between STE and Tikal entrance on 14 Feb and 21 Sep 89, along rd between STE and SA on 18 Feb 89, and along rd between LPI and Sayaxché on 20 Mar–4 Apr 76. Current status: visitor; probable resident.

SNAIL KITE *Rostrhamus sociabilis*

Previously known in Petén only from three records near LPI (Salvin & Godman 1879–1904, Van Tyne 1935, Taibel 1955). 22 Sep 89 at Tikal by CA, RB, CB, MBr, RBr, LS—**NT**; additional sightings at LPI on 19 Mar 80 and 9, 14 Feb 88. Current status: visitor at Tikal; resident at LPI and larger aguadas.

SHARP-SHINNED HAWK *Accipiter striatus*

Previously known in Guat from the Caribbean and Pacific Subtropics and Lowlands, Arid Interior and western Highlands (Salvin & Godman 1879–1904, Griscom 1932, Land 1970, Wendelken & Martin 1986, Vannini 1989a, 1989b). 18 Feb 77 along rd between LPI and Sayaxché by FO—**NP**; 7 Feb 88 along rd at Tikal entrance by DD—**NT**; one sighting of a well documented *A. striatus chionogaster* (white-breasted form) on 27 Feb 88 at Tikal by BW. Current status: uncertain; possible visitor.

COOPER'S HAWK *Accipiter cooperii*

Previously known in Guat from the western Highlands W of Guat City and near Cobán (Salvin & Godman 1879–1904, Land 1970, Vannini 1989a, 1989b). 16 Mar 87 along rd between ER and Tikal entrance by PJ—**NP**. Current status: uncertain; possible visitor.

SOLITARY EAGLE *Harpyhaliaetus solitarius*

Previously known in Guat from the Department of Baja Verapaz and Pacific Slope of western Highlands (Salvin & Godman 1879–1904, Land 1970, Vannini 1989a, 1989b). 11 Mar 86 at Tikal (courting pair vocalizing) by FO, BW—**NP, NT**; additional sightings at Tikal on 18 Mar 88 and 4 Mar 89 at very close range. Current status: uncertain; possible visitor.

SHORT-TAILED HAWK *Buteo brachyurus*

Previously known in Guat from the Departments of Alta Verapaz, Izabal (Salvin & Godman 1879–1904, Land 1970, Wendelken & Martin 1986), Escuintla (P. Alden, pers. comm.), Chiquimula, and from the western Highlands (Vannini 1989a, 1989b; S. N. G. Howell, pers. comm.). 20 Feb 71 at Tikal by PA—**NP, NT**; additional sightings at Tikal on 18 Aug 76, 11 Mar 86, 27 Feb, 4 Mar and 19 Jun 88, 5 Jan 89, 9–10 Feb 90, and annually outside of Tikal 1972–1989. Current status: local resident.

ZONE-TAILED HAWK *Buteo albonotatus*

Previously known in Guat from the Pacific Lowlands and western Highlands (Griscom 1932, Land 1970, Vannini 1989a, 1989b). 16 Feb 88 at Tikal by EC—**NP, NT**; additional sightings along rd between ER and Tikal entrance on 21 Sep 89 and 22 Mar 90. Current status: visitor outside of Tikal; probable transient in this part of range.

CRESTED EAGLE *Morphnus guianensis*

Previously known in Petén from 5–7 Apr 66 30–50 km E of Fl (Ellis & Whaley 1981), and 24 Jan and 7 Feb 78 in SE region (C. Leahy, pers. obs.). 11 Apr 88 at Tikal by RT—**NT**; additional sightings at Tikal on 23 Sep 89 and monthly Feb–May 90. Current status: visitor; possible local resident.

BLACK-AND-WHITE HAWK-EAGLE *Spizastur melanoleucus*

Previously known in Petén from SC region (Land 1970) and at LPI in Aug 76 (C. Leahy, pers. obs.). 15 Feb 89 at Tikal by FO—**NT**; additional sightings on 6 Mar 88 along rd between ER and Tikal entrance and 13 May 89 at Tikal. Current status: visitor; probable local resident.

COMMON MOORHEN *Gallinula chloropus*

Previously recorded once in Petén from SW region (Land 1970). 30 Dec 70–2 Jan 71 at Tikal by RA—**NT**; numerous annual sightings thereafter through 1990 at Tikal, Aug–Mar. Current status: transient and winter resident.

GREATER YELLOWLEGS *Tringa melanoleuca*

Previously known in Petén from extreme SW region in Mar and Apr (Land 1970). End of May 66 at Tikal by LM (P. Alden, pers. comm.)—**NT**; additional sightings at Tikal in Feb and May 88. Current status: visitor; possible regular transient (no fall records).

LESSER YELLOWLEGS *Tringa flavipes*

Previously known in C Petén from one record on 20 Sept 23 at LL (Van Tyne 1935). One sighting reported in Feb 88 at Tikal by EC—**NT**. Additional Petén record reported at LPI on 9 Feb 88. Also, there is a report of this species being found as a prey item in the nest of *Falco deiroleucus* at Tikal (Burnham *et al.* 1989). Current status: visitor; probable regular transient.

WESTERN SANDPIPER *Calidris mauri*

Previously known in Guat from coastal regions and Pacific Slope lakes (Griscom 1932, Land 1970). 12 Oct 90 at Tikal by RB—**NP, NT**. Current status: visitor.

LEAST SANDPIPER *Calidris minutilla*

Previously known in Guat from the Pacific and Caribbean Lowlands and Volcanic Highland lakes (Dearborn 1907, Griscom 1932, Land 1970). 9 Feb 78 at LPI by FO—**NP**; 30 Oct 84 at Tikal by SNGH—**NT**; additional sighting at Tikal on 3 May 88. Current status: visitor; probable regular transient.

STILT SANDPIPER *Calidris himantopus*

Previously known in Guat from the Volcanic Highland lakes (Salvin & Godman 1879–1904, Land 1970) and Pacific coast (C. Leahy, pers. obs.). 20 Mar 78 at LPI by CL—**NP**. Current status: visitor.

WILSON'S PHALAROPE *Phalaropus tricolor*

Previously known in Guat only from the Pacific Lowlands (Salvin & Godman 1879-1904). 3 May 88 at Tikal by RT—**NP, NT**. Current status: visitor.

LAUGHING GULL *Larus atricilla*

Previously known in Guat only from the Pacific and Caribbean coasts and Vocanic Highland lakes (Salvin & Godman 1879–1904, Griscom 1932, Land 1970). 16 Jan 70 at LPI by PA—**NP**; additional sightings at LPI on 17–18 Feb 75, 22–23 Feb 77, 9 Feb 78, 13 Feb 87, 6–9 Feb 88, 12–14 Feb 89, 10 Feb and 22 Mar 90. Current status: (winter) visitor at LPI.

RING-BILLED GULL *Larus delawarensis*

Previously known in Guat only from Lake Atitlán in the Volcanic Highlands (Land 1970). 9 Feb 78 at LPI by FO—**NP**; additional sighting at LPI on 13 Mar 88. Current status: visitor at LPI.

ROYAL TERN *Sterna maxima*

Previously known in Guat from the Pacific and Caribbean coasts (Salvin & Godman 1879–1904, Land 1970) and Lago de Izabal (C. Leahy, pers. obs.). 10 Feb 88 at LPI by DD—**NP**; additional sightings at LPI on 14 Feb 88, 12 Feb 89 and 7 Jan 90. Current status: (winter) visitor at LPI.

ROCK DOVE *Columba livia*

Land (1970) indicates domestication in 'most' parts of country, but no Tikal records are known. 19–20 Feb 77 at Tikal by FO—**NT**; additional sightings at Tikal on 15 Nov 77 and 14 Mar 88. Current status: visitor at Tikal; local resident in towns and villages outside of Tikal.

PALE-VENTED PIGEON *Columba cayennensis*

Known as a resident in the rather open second growth areas outside of Tikal (Van Tyne 1935, Taibel 1955). 20 Feb 75 at Tikal by TD (P. Alden, pers. comm.)—**NT**; additional sighting at Tikal on 5 May 88. Current status: visitor at Tikal; resident outside of Tikal.

RED-BILLED PIGEON *Columba flavirostris*

First reported in literature from Petén in Jun 80 at Polol (Brodkin & Brodkin 1981); but recorded earlier at Sayaxché on 3 Feb 69 by NC, BM. 14 Feb 89 at Tikal by JA, FO—**NT**; additional sightings along rds between STE and LL, and STE and SA, on 6–15 Feb 88 and 13–18 Feb 89, and along rd between ER and Tikal on 10–12 Feb 90. Current status: visitor at Tikal; probable resident locally outside of Tikal.

MOURNING DOVE *Zenaida macroura*

Previously known in Guat from the Arid Interior, Pacific Subtropics, western Highlands and Pacific Lowlands (Salvin & Godman 1879–1904, Ridgway 1901–1950, Griscom 1932, Land 1970, Vannini 1989a). 17 Nov 77 at LPI by FO—**NP**; 28 Oct 84 at Tikal by SNGH—**NT**; additional sightings along rd between STE and Tikal entrance on 1–14 Feb 88 and 16 Feb 89. Current status: visitor outside of Tikal; irregular at Tikal; possible regular transient and winter visitor.

INCA DOVE *Columbina inca*

Land (1970) suggests this species may occur as a resident in the savannahs S and W of LPI. This is probably the locality of the specimen reported in Moore (1859). March 1972 at Tikal by TD (C. Leahy, pers. comm.)—**NT**; additional sightings near LPI on 18 Feb 75 and 26–29 Nov 76. Current status: visitor.

GRAY-CHESTED DOVE *Leptotila cassinii*

Land (1970) indicates this species is a rare resident in the southern half of Petén. 9 Apr 88 at Tikal by EC—**NT**. Current status: uncertain; possible local resident outside Tikal.

BLACK-BILLED CUCKOO *Coccyzus erythropthalmus*

First reported in literature from Petén on 2 Jun 85 near LPI by Wendelken & Martin (1986); but recorded earlier at Tikal on 19 Aug 76 by CL—**NT**. Current status: visitor.

YELLOW-BILLED CUCKOO *Coccyzus americanus*

First reported in literature from Petén on 13 Jun 80 at Polol by Brodkin & Brodkin (1981); however, an earlier record was noted at Tikal on 14 Aug 78 by CL—**NT**; additional sighting at Tikal on 15 Apr 89. Current status: visitor; possible regular transient.

SPECTACLED OWL *Pulsatrix perspicillata*

Previously known in Petén from S and E regions, including one record at Yaloch near Belize, but no Tikal records have been reported (Van Tyne 1935, Land 1970). 17 Jan 77 at Tikal by LK—**NT**; additional sighting at Tikal on 27 Jan 77 and one heard calling and tape recorded on 1 Mar 90. Current status: visitor at Tikal; probable resident locally outside of Tikal.

LEAST PYGMY-OWL *Glaucidium minutissimum*

Land (1970) indicates this species should occur in Petén, but no records are known. 10–13 Nov 78 at Tikal by RAR—**NP, NT**; additional record 12 Mar 86 at Tikal (2 heard calling only, tape recorded). Current status: uncertain; possible visitor at Tikal; possible resident locally outside of Tikal.

COMMON POTOO *Nyctibius griseus*

Regarded by Land (1970) as an uncommon resident throughout most of Petén. Despite a specimen collected at nearby Uaxactún by Van Tyne (1935), no Tikal records are known. 17 Feb 89 along Tikal entrance rd by JA, FO—**NT**. Current status: visitor at Tikal; resident locally outside of Tikal.

WHITE-COLLARED SWIFT *Streptoprocne zonaris*

Known to occur in S Petén in winter (Land 1970). 15 Jan 70 at Tikal by CL—**NT**; additional sightings at Tikal on 2–3 Feb and 4–5 Dec 75, 15–16 Nov 77, 14 Feb 81, 4 Mar 86, 16 Feb 89 and 28 Mar 90. Current status: (winter) visitor.

BLACK-CRESTED COQUETTE *Lophornis helenae*

First reported in literature from Petén on 26 Feb 84 and 27 Feb 85 at Tikal by Wendelken & Martin (1986); however, there is an earlier record from Tikal on 18 Jan 77 by CL—**NP, NT**; additional sightings were also reported at Tikal in Feb 78 and Mar 81. Current status: (winter) visitor.

AZURE-CROWNED HUMMINGBIRD *Amazilia cyanocephala*

Previously known in Petén only from one record in SE region (Salvin & Godman 1879–1904). 15 April 89 at Tikal by MBr, RBr, EF—**NT**. Current status: visitor.

BERYLLINE HUMMINGBIRD *Amazilia beryllina*

Previously known in Guat from the Pacific Lowlands, Arid Interior and in the Caribbean Lowlands N to the Petén border (Salvin & Godman 1879–1904, Dearborn 1907, Griscom 1932, Land 1970). 28 Aug 77 at Tikal by JS—**NP, NT**; additional sighting at Tikal on 18 Jan 89 and in S

Petén on 24 Aug 77. The January 89 bird was well documented by BM, JP, noting characteristics to distinguish from similar *A. tzacatl* and *A. yucatanensis*. Known to wander to lower, more humid forests in non-breeding season (Monroe 1968, A.O.U. 1983). Current status: uncertain; possible visitor.

RUBY-THROATED HUMMINGBIRD *Archilochus colubris*

Previously known in Petén from one record near SA (Salvin & Godman 1879–1904). 17 Jan 77 (and several times through 28 Jan) at Tikal by CL—**NT**; additional sightings at Tikal on 11 Feb 87, 19 Jan and 24 Sep 89, 18–19 Mar 90 and 11 Oct 90. Current status: transient and winter resident.

RUFOUS-BREASTED SPINETAIL *Synallaxis erythrothorax*

Land (1970) indicates this species is 'probably' fairly common in S Petén, but gives no records. 16 Mar 67 at Sayaxché by PA—**NP**; 2 Feb 75 at Tikal by CL—**NT**; additional sightings from various areas S of LPI 1970–90. Current status: visitor at Tikal; resident locally S of LPI.

STREAK-HEADED WOODCREEPER *Lepidocolaptes souleyetii*

Known throughout most of Petén, including nearby Uaxactún (Salvin & Godman 1879–1904, Van Tyne 1935, Land 1970), but no Tikal records have been reported. 3 Feb 75 at Tikal by CL—**NT**; numerous additional reports from Tikal in 1975, 1977 78 and 1986–90. Current status: resident, both inside and outside of Tikal.

SLATY ANTSHRIKE *Thamnophilus punctatus*

Previously known from the humid forests of the Caribbean Lowlands of Guat and from S Belize (Land 1970). 27 Aug 77 at Tikal by JS—**NP, NT**; additional sighting at Tikal on 6 Jan 89. Current status: uncertain; possible visitor (resident?).

YELLOW-BELLIED ELAENIA *Elaenia flavogaster*

Land (1970) indicates this species is an uncommon resident in Petén, but no Tikal records are known. 7 Jun 57 at Tikal by EE (K. Ladwig, pers. comm.)—**NT**; additional sighting at Tikal 16 Nov 77. Current status: visitor at Tikal; resident locally outside of Tikal.

SLATE-HEADED TODY-FLYCATCHER *Todirostrum sylvia*

First reported in C Petén on 21 Apr 23 at San Miguel (Van Tyne 1935). 4 Jan 75 at Tikal by CL—**NT**; numerous additional sightings in disturbed areas from both inside and outside of Park in 1976 and 1986–90. Current status: resident.

WILLOW FLYCATCHER *Empidonax traillii*

Smithe (1966) describes the Alder Flycatcher (*E. alnorum* by current taxonomy) as the common fall migrant *Empidonax*. Subsequent examination by A. R. Phillips of 15 specimens collected by F. B. Smithe determined 6 to be *E. alnorum* and 9 to be *E. traillii* (R. A. Paynter, Jr., pers. comm.). *E. traillii* had not been reported from Petén—**NP, NT**. Current status: transient; no confirmed spring records.

LOVELY COTINGA *Cotinga amabilis*

Previously known in Guat from the Caribbean Lowlands and Subtropics (Salvin & Godman 1879–1904, Dearborn 1907, Land 1970). 15 Jan 70 at Tikal by PA—**NP, NT**; additional sightings at Tikal 18 Mar and 23 Jun 88 and Jul 90 (photographed), along rd between LL and Sayaxché 6 Dec 75, near LPI 20 Mar 87, and along rd between STE and SA 17 Feb 89. Current status: visitor (seasonal?); possible local resident.

TREE SWALLOW *Tachycineta bicolor*

Previously known in Guat from the western and central Highlands (Salvin & Godman 1879–1904, Dearborn 1907, Land 1970). Land (1970) further indicates this species is found over 'much' of the country, but gives no records for Petén. 5 Feb 69 at Tikal by NC, BM, FO—**NP, NT**; additional sightings at Tikal on 26 Aug 77 and 25–28 Feb 90, and along rd near STE on 18 Mar 90. Current status: visitor; probable regular transient.

BANK SWALLOW *Riparia riparia*

Previously known in Guat from the Volcanic Highlands and Caribbean Lowlands (Salvin & Godman 1879–1904, Land 1970) and Pacific Lowlands (C. Leahy, pers. obs.). 26 Aug 76 at Tikal by JS—**NP, NT**; additional sighting at Tikal on 5 May 88. Current status: visitor; probable regular transient.

CLIFF SWALLOW *Hirundo pyrrhonota*

Likely to be seen anywhere in Guat, but no records are known from Petén (Land 1970). 17–19 April 72 at Tikal by TD (C. Leahy, pers. comm.)—**NP, NT**; additional sighting at Tikal on 21 Mar 90. Current status: visitor; possible regular transient; no fall records.

BAND-BACKED WREN *Campylorhynchus zonatus*

Previously known in Petén from east-central region and at Polol (Van Tyne 1935, Land 1970, Brodkin & Brodkin 1981) but no Tikal records known. 24 Mar 90 at Tikal by CB, JM, BN—**NT**. Current status: visitor at Tikal; resident locally outside of Tikal.

HOUSE WREN (southern form) *Troglodytes aedon musculus*

Previously known throughout Petén (Van Tyne 1935, Taibel 1955, Land 1970), but no Tikal records have been reported. 8 Mar 87 at Tikal by CA, RB—**NT**; numerous additional sightings at Tikal 1988–90. Current status: resident.

BLACK CATBIRD *Melanoptila glabrirostris*

Previously known in Guat from two Petén records on 27 Jun 23 at Ixtinta and 19 Jun 32 near LPI (Van Tyne 1935, Taibel 1955). 26 Aug 86 at Tikal by CA—**NT**; additional sighting on 18 Mar 90 along rd near STE. Current status: local resident.

WARBLING VIREO *Vireo gilvus*

Previously known in Guat from the Arid Interior, Pacific Subtropics and from moderate elevations in western Highlands as transient from 28 Sep to 2 Apr (Dearborn 1907, Griscom 1932, Land 1970). 17 Feb 75 at Tikal by FO—**NP, NT**; additional sightings at Tikal 20 Mar–4 Apr and

26–29 Nov 76, 19–22 Feb and 15–16 Nov 77, 7–8 Feb 78 and 17 Apr 89. Current status: visitor; probable regular transient.

RUFOUS-BROWED PEPPERSHRIKE *Cyclarhis gujanensis*

Previously known in Guat from the Pacific and Caribbean Subtropics and Foothills, and from moderate elevations in western and central Highlands (Salvin & Godman 1879–1904, Griscom 1932, Land 1970). 14 Aug 76 S of LPI by CL—**NP**; additional sightings from various areas S of LPI 1–20 Feb 88, 13–18 Feb 89 and 22 Mar 90. Current status: resident locally S of LPI.

ORANGE-CROWNED WARBLER *Vermivora celata*

Previously known in Guat as a winter visitor in the Highlands, Caribbean Lowlands and S Petén (Land 1970). 9 Oct 90 at Tikal by RB, CB, CS—**NT**. Current status: visitor; possible regular transient.

NASHVILLE WARBLER *Vermivora ruficapilla*

Previously known in Guat from the western and central Highlands, Subtropics and Pacific Lowlands (Griscom 1832, Land 1970). 21 Feb 75 at Tikal by CL—**NP, NT**; additional sightings at Tikal on 2 Jan 76, 14 Feb 81 and 19 Jan 89. Current status: (winter) visitor.

VIRGINIA'S WARBLER *Vermivora virginiae*

Not confirmed as occurring S or E of Isthmus of Tehuantepec, Mexico; however, there was a report of this species in Belize on the 89th Christmas Bird Count (Howell 1989). 23 Feb 77 near LPI by FO—**NG, NP**. This very unusual record was well documented, noting all characteristics to distinguish from similar species, except perhaps pale individuals of *V. ruficapilla*. Current status: uncertain; possible visitor.

NORTHERN PARULA *Parula americana*

Previously known in Guat from the Pacific and Caribbean Lowlands (Salvin & Godman 1879–1904, Dearborn 1907, Land 1970). 15 Jan 70 at Tikal by PA—**NP, NT**; additional sightings at Tikal in Jan and Feb 71. Current status: visitor.

CAPE MAY WARBLER *Dendroica tigrina*

Previously known in Guat from the western Highlands (Mason 1976; P. Alden, pers. comm.) and Caribbean Lowlands (C. Leahy, pers. obs.). 2 Feb 75 at Tikal by CL—**NP, NT**; additional sightings at Tikal (probably of same bird) on 4, 20 Feb 75. Current status: visitor.

YELLOW-THROATED WARBLER *Dendroica dominica*

Previous occurrence of this species in Petén is unclear (see Land 1970). Reported in Tikal in Mar 72 by CL—**NT** (possible **NP**); additional sightings at Tikal on 20–22 Feb 73, 18 Feb 75, 15 Nov 77, 18 Mar 88, 4 Jan 89 and 18–19 Mar 90, and near LPI on 22 Feb 75. Current status: probable regular transient and winter resident.

GRACE'S WARBLER *Dendroica graciae*

Previously known in Guat only from the pine and pine-oak woodlands of the Caribbean Subtropics (Land 1970). 5 Sep 77 in a grove of pines approximately 40 km S of Fl by JS—**NP**. Current status: uncertain; possible visitor to the pine ridges of SE Petén.

BAY-BREASTED WARBLER *Dendroica castanea*

First reported in literature from Petén at Tikal on 7 May 82 by Wendelken & Martin (1986); but recorded earlier at Tikal on 18 Apr 72 by TD; additional sightings on 22–29 Mar 81, 27 Oct 84, 26 Feb and 2 Mar 90. Current status: visitor; probable regular transient.

SWAINSON'S WARBLER *Limnothlypis swainsonii*

Not previously recorded from Guat, but known from the Yucatán Peninsula and S Chiapas in Mexico, and Belize (Paynter 1955, Russell 1964, Lynch 1989, Ornat *et al.* 1989, Rangel-Salazar & Vega-Rivera 1989). 8 Feb 78 at Tikal by FO—**NG, NP, NT**; additional sightings at Tikal 16–18 Feb 89 (at least 2 separate birds). Current status: visitor.

GRAY-CROWNED YELLOWTHROAT *Geothlypis poliocephala*

Previously known in Petén from 2 records outside Tikal on 8–11 May 23 at Chuntuqui and 1 Jul 23 at Gavilán (Van Tyne 1935). 5 Feb 69 at Tikal by NC, FO—**NT**; additional sighting at Tikal 10–11 Feb 87, and near LPI on 17 Jan 77 and annually thereafter through 1984, and 13 Feb 87. Current status: resident outside of Tikal; possible resident locally in Tikal.

CANADA WARBLER *Wilsonia canadensis*

Previously reported throughout Guat, except from Petén (Salvin & Godman 1879–1904, Griscom 1932, Land 1970). Reported at Tikal on 7 Mar 72 by NP—**NP, NT**; additional sightings at Tikal on 26–29 Nov 76, 20, 23 Sep 89 and 11 Oct 90. Current status: visitor; probable regular transient.

RUFOUS-CAPPED WARBLER *Basileuterus rufifrons*

Known in Guat from the Highlands, ranging down into the Caribbean Lowlands near the S Petén border (Land 1970). 16 Jan 89 along rd between STE and Tikal by JSp—**NP**; 18 Jan 89 at Tikal by CA—**NT**. Current status: uncertain; possible visitor.

BLUE-GRAY TANAGER *Thraupis episcopus*

Land (1970) reports this species as an uncommon resident throughout Petén, but no Tikal records are known. 30 Dec 70–2 Jan 71 at Tikal by RA—**NT**; numerous additional sightings nearly every year since first record. Current status: resident.

SCARLET TANAGER *Piranga olivacea*

Previously known in Petén from a few spring and fall reports, but no Tikal records have been reported (Land 1970). 4 Dec 75 at Tikal by RR—**NT**; additional sighting at Tikal on 11 Oct 90. Current status: visitor; possible regular transient; Dec record particularly unusual.

BUFF-THROATED SALTATOR *Saltator maximus*

Previously known in Guat from the Caribbean Lowlands and Subtropics (Salvin & Godman 1879–1904, Dearborn 1907, Griscom 1932, Land 1970). 20 Mar–4 Apr 76 S of LPI by RAR—**NP**; additional sightings from various areas S of LPI on 11 Feb and 10–13 Nov 78, 1–19 Feb

88, 14, 18 Feb 89, 22 Mar and 7 Oct 90. Current status: resident locally S of LPI.

YELLOW-BILLED CACIQUE *Amblycercus holosericeus*

Land (1970) reports this species as an uncommon resident in Petén, but no Tikal records are known. 15 Apr 89 at Tikal by MBr, RBr, EF—**NT**. Current status: visitor at Tikal; resident outside of Tikal.

Acknowledgements

The authors wish to thank all of those who have shared their personal data (and that of their co-observers), and those who have assisted in the field. They include Carl Aiken (CA), Peter Alden (PA), John Arvin (JA), Robert Askins (RA), John Baird, Bob Barth, Robbie Beavers, Bob Behrstock, Chris Benesh (CBe), Carol Bookout (CB), Major Bowles, Marcia Braun (MBr), Ron Braun (RBr), Howard Brokaw, Caroline Callery, Norm Chesterfield (NC), Elbert Cleaveland (EC), Tom Davis (TD), Earnest Edwards (EE), Bill Fritz, Emery Froelich (EF), Michael Gochfeld, Steven Hilty, Steve N. G. Howell (SNGH), Peter Jenny (PJ), Lawrence Kilham (LK), Katrina Ladwig, Jane Lyons, Bertha Massie (BM), John McMillon (JM), Bill Mealy (BM), Lee Morgan (LM), Blanca Noel (BN), Jim Powell (JP), Pat Powell, Noble Proctor (NP), Robert Ridgely (RR), Rose Ann Rowlett (RAR), Linda Schooley (LS), Jeffrey Schultz, Carol Sloan (CS), Jan Smith (JS), Jane Sparrow (JSp), Dave Stejskal, Tim Sullivan, Russell Thorstrom (RT), Gloria Tveten, John Tveten, Jan Vannini (JV) and Bret Whitney (BW). J. Peter Jenny and the staff of The Peregrine Fund were particularly helpful with their suggestions, comments and detailed attention given to this report. Raymond A. Paynter, Jr. of the Harvard University Museum of Comparative Zoology is thanked for the valuable data provided from F. B. Smithe's collection. Nathan Kraucunas of the Milwaukee Public Museum is appreciated for providing specimen records from western Petén.

For reviewing the manuscript, we wish to thank J. Peter Jenny, John P. O'Neill, John L. Tveten and Jay P. Vannini. Their comments and suggestions were most helpful.

The senior author is deeply grateful to Guatemala's tourism department, INGUAT, for their assistance during various stays in Guatemala, and to the Spring Branch Independent School District Board of Trustees for granting time away from the Science Center to conduct the field work. Antonio Ortiz, proprietor of the Jungle Lodge, is thanked for sharing his special knowledge of the region and for his never-ending hospitality.

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Notes on the status and behaviour of the Rusty-necked Piculet *Picumnus fuscus*

by Theodore A. Parker, III & Omar Rocha O.

Received 4 October 1990

The Rusty-necked Piculet *Picumnus fuscus* is a small woodpecker known from fewer than 10 specimens collected along the middle Rio Guaporé (or Río Iténez) of Brazil/Bolivia. Because there is apparently no published information on its status and behaviour, we here report recent observations from eastern Bolivia.

On 21 August 1990, during an avifaunal survey of lowland forests of eastern Departamento Beni, Parker and Rocha found this piculet to be fairly common in seasonally flooded forests along the Rio Guaporé/Iténez in the vicinity of Versalles, a small Bolivian village on the west bank of the river. We first found a pair with a canopy mixed flock of woodcreepers, formicariids and other small insectivores (e.g. *Sittasomus griseicapillus, Xiphorhynchus picus, Xenops tenuirostris, Pygiptila stellaris, Myrmotherula assimilis, M. axillaris* and *M. menetriesii*) that foraged at 10–16 m in the viny canopy of stunted river-edge forest on the Brazilian side of the river. The piculets hopped quickly along slender vinelets and dead branchlets, tapping vigorously as if to dislodge small insects from the bark. Later, we watched a family of 4 (perhaps 5) *P. fuscus* as they foraged in tangles of slender, spineless bamboo stalks and vines in the understory and at mid-heights 2–5 m above ground in the same forest. The male sang regularly and responded strongly to playbacks by flying to within 2 m of us and rocking up and down on its perch. Male song was a series of 4–5 thin but protracted *seet* notes. The female sang a similar but shorter song. All individuals in the group uttered soft *psit* notes while foraging. Tape-recordings of these vocalizations are housed in the Library of Natural Sounds, Cornell University (Ithaca, New York). The primary song of *Picumnus fuscus* is very like that of *Picumnus aurifrons borbae*, which we thought we heard in high-ground forest west of Versalles. We also heard *P. fuscus* in a small area of flooded forest on the Bolivian side of the river, *c.* 500 m south of the village. From water marks on the trees on both sides of the river, we assume that *P. fuscus* habitat is inundated by up to 2 m of water during the wet season. A variety of other flooded forest species were observed in this habitat, including *Myrmotherula assimilis* and *Schiffornis major*.

The presumed adult *Picumnus fuscus* that we observed had unmarked, mainly buff-coloured underparts, in contrast to the adult pictured on Plate 3 of Short (1982). Although the ventral pattern and preference for riverine forest would suggest a close relationship with *P. castelnau*, the vocalizations of *P. fuscus* clearly place it in a group with *P. exilis* and *P. aurifrons*. The very different trilled songs of *P. castelnau* are shared by the majority of *Picumnus* species, including all members of the *cirratus* group known to us (i.e. *minutissimus, dorbygnianus, steindachneri* and *temmincki*).

To our knowledge, this is the only bird species restricted to the Rio Guaporé drainage of Bolivia/Brazil. Short's (1982) inclusion of Dpto. Beni, Bolivia, in the range of *P. fuscus* is based on three previously unpublished specimens, one male and two females collected by Juan Cuello on the Bolivian side of the Rio Guaporé "frente a Costa Margues" on 30 August and 4 September 1964 (American Museum of Natural History nos. 791898-900; A. Capparella, *in litt.*).

Picumnus fuscus is in no way threatened by the deforestation occurring in other parts of southwestern Brazil, as the 500 km section of the Rio Guaporé from Pimenteiras to Guayaramerin is largely uninhabited and almost continuously forested along the river (pers. obs.). Furthermore, a large portion of the species' range apparently lies within the Reserva Biológica do Guaporé, Rondonia, Brazil.

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Natural history notes and records for seven poorly known bird species from Amazonian Peru

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Received 22 October 1990

The goal of this article is to report new or additional data on the behaviour, natural history and distribution of seven poorly known bird species from Amazonian Peru. The majority of these records are from or near the Pakitza guard station in the Reserved Zone on the eastery boundary of Manu National Park, Department of Madre de Dios (11°57′S, 71°15′W), and near the Pithecia guard station (Cocha Shinguito) on the Samiria River of the Pacaya-Samiria National Reserve, Department of Loreto (5°S, 74°30′W). All specimens collected are housed in the Collection of Birds, Natural History Museum of San Marcos University, Lima, Peru.

SOUTHERN SCREAMER *Chauna torquata*

On 7 September 1989 as we ascended the Madre de Dios River in canoes, an individual was observed on a sandy beach 12 km NW of the gold-mining settlement of San Francisco (c. 52 km NW Puerto Maldonado). Over 25 observers in the two canoes noted the reddish legs, white cheeks and throat, and overall greyish body that distinguished it from the larger, darker and common screamer species of the area, the Horned Screamer *Anhima cornuta*. We observed the individual for more than 5 minutes as it repeatedly flew up the beach several metres at a time in front of the canoes.

Only one additional record of Southern Screamer is known for Peru, also in the Department of Madre de Dios but from SE of Puerto Maldonado on the Tambopata River (Parker 1982). The nearest known breeding populations are in the northwestern part of the Department of Beni, Bolivia (Gyldenstolpe 1945, Pearson 1975).

BLACK-BELLIED CUCKOO *Piaya melanogaster*

This species was found regularly but in small numbers in tall flood-plain forest 4 km south of Pakitza. Normally we saw it in large mixed-species flocks foraging in the lower portion of the canopy. This cuckoo is rarely found at the Cocha Cashu Biological Station 10 km upriver from Pakitza (S. K. Robinson, pers. comm.) even though virtually identical flood-plain forest occurs there. Its ecological relationship with the more common and widespread congener, the Squirrel Cuckoo *P. cayana*, is unclear. The latter species occurs in a broad range of habitat types from primary forest to secondary forest whereas the Black-bellied Cuckoo is more limited to primary forest. North of Pakitza at Yarinacocha, Department of Ucayali (O'Neill & Pearson 1974), and south of Pakitza at Tambopata Reserved Zone, Department of Madre de Dios (T. A. Parker, pers. comm.), the two species are regularly seen in the same habitat of tall primary forest.

AMAZONIAN UMBRELLABIRD *Cephalopterus ornatus*

On 7 September 1989, we observed a single male fly across the Madre de Dios River 5 km NW of the settlement called San Francisco (45 km NW Puerto Maldonado). Its undulating, woodpecker-like flight together with an erect crest facilitated the identification. It then landed in *Cecropia* trees on the bank of the river where it fed on fruits a few minutes before flying out of sight and away from the river. This species has been spottily recorded from lower stretches of the Madre de Dios River but is evidently much rarer in the upper parts of this drainage (Snow 1982). No records are known from the extensively studied lowland areas of Manu (Terborgh *et al.* 1984).

PERUVIAN RECURVEBILL *Simoxenops ucayalae*

This species is endemic to southeastern Peru and is most frequently found in bamboo stands (*Guadua* spp.) and occasionally canebrakes (*Gynerium* spp.) (Parker 1982, Parker & Remsen 1987). Very few specimens have been collected and none from the Manu area. In February 1990 we collected a male 0.6 km E of Pakitza. It weighed 50 g; had moulting feathers on the head, belly and tail; the cranium was 75% ossified; gonads were 4 × 2 mm; and the stomach contained palpi of spiders, mandibles of larval beetles and cerci of earwigs (Dermaptera).

LONG-CRESTED PYGMY-TYRANT *Lophotriccus eulophotes*

Only a few records of this endemic species are known from southeastern Peru and adjacent northwestern Bolivia (Parker & Remsen 1987). We found it to be regular but uncommon in the vicinity of Pakitza. Virtually all of our observations of this species were in or near bamboo stands. About 40% of the individuals were loosely associated with mixed-species flocks. The rest of the observations were of solitary birds giving their high pitched vocalizations (Parker & Remsen 1987) from a perch in relatively dense vegetation 3 to 6 m above the ground.

We collected two specimens at Pakitza. The first was from a bamboo stand in September 1988. It was an unsexed juvenile weighing 5.5 g; no moulting feathers; 25% ossification of the cranium; and stomach contents were 100% insect remains. The second was a female from alluvial terrace forest with small stands of bamboo in September 1989. It weighed 6.0 g; moulting feathers on the body and head; 50% ossification of the cranium; ovary 7 × 3 mm; and stomach contents were beetle remains.

WING-BANDED WREN *Microcerculus bambla*

A female weighing 17 g (gonads 4 × 2·5 mm) was mist-netted at Pakitza in September 1989. Moulting was evident on the breast, and the stomach contained 100% insect remains including many beetle parts. The habitat in which this specimen was collected was primary forest on flood-plain soil. The congener *M. marginatus* (Nightingale Wren) was common in this habitat, but no other individuals of the Wing-banded Wren were observed or captured. Only one previous specimen has been collected in Peru, also near Pakitza (AMNH 824080). Terborgh *et al.* (1984) report several observations of Wing-banded Wrens from Cocha Cashu, but it is also very rare there. Evidently these two species tend to separate generally by altitude in areas of sympatry in eastern Ecuador and eastern Peru with the Wing-banded Wren more common at higher altitudes (Ridgely & Tudor 1989).

ECUADORIAN CACIQUE *Cacicus sclateri*

We found this species to be common and regular along the middle and upper stretches of the Samiria River in the Pacaya-Samiria National Reserve. A specimen was collected from this site earlier (Ridgely & Tudor 1989). This species is known from only one other locality in Peru (Huampami, Department of Amazonas); a specimen record from the Rio Curaray, Department of Loreto, is of dubious origin (T. Parker, pers. comm.).

We recorded its ringing song, *peé-chur, peé-chur, peé-chur, chur-chur-chur,* which was heard throughout the day in the middle and upper strata of the flood-plain forest. One pair came to the large red flowers of a leguminous tree (flower heights 4–10 m) on the edge of the river every day between 13.00 and 14.30 for two weeks (20 May–2 June 1990). They actively probed the corollas of the flowers for nectar or insects. Both individuals would call back and forth to each other. At this close range the pale blue eye and the pale bluish bill tipped with yellowish were obvious. Direct comparisons of the similar congener *C. solitarius* (Solitary Cacique) were possible, as the two species frequently called from the same area. Although the Solitary Cacique tended to feed lower in the vegetation near the river, both species occasionally occurred together in the mid strata of open flood-plain forest. Only the Ecuadorian Cacique, however, regularly associated with other species such as Troupial *Icterus icterus*, Paradise Tanager *Tangara chilensis,* and Masked Crimson Tanager *Ramphocelus nigrogularis*. The larger body size, all pale-green bill, dark eye and the louder more slurred song of the Solitary Cacique served to readily distinguish it from the Ecuadorian Cacique.

Acknowledgements

This research was funded by grants from the Neotropical Biological Diversity Program, U.S. National Museum of Natural History, Washington, DC, and sponsored by the Universidad Mayor de San Marcos, Lima, Peru. T. L. Erwin assisted in the field work, and early drafts of the article were critically reviewed by J. V. Remsen and T. A. Parker.

This article is no. 11 of the Biological Diversity in Latin America (BIOLAT) contribution series.

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Female and first-year male plumages of paradise whydahs *Vidua interjecta*

by Robert B. Payne

Received 13 November 1990

The brood parasitic West African Broad-tailed Paradise Whydah *Vidua interjecta* occurs across Upper and Lower Guinea through northeastern Zaire. Its distribution is associated with its foster species, the Red-winged Pytilia *Pytilia phoenicoptera* (Nicolai 1964, Hall & Moreau 1970, Payne 1985). Although *V. interjecta* is known from museum skins and field observations of males in breeding plumage, the female and nonbreeding male have not been described. The plumage of females and nonbreeding males may be as significant as that of the males in identification and in evaluating species relationships among the whydahs (Payne 1971).

Vidua interjecta (Grote, 1922) was described from a male taken in breeding plumage in Central African Republic near Mbaiki, where both *Pytilia phoenicoptera* and *P. hypogrammica* occur (Carroll 1988). *Vidua longicauda* (Chapin, 1922), described later (see Chapin 1929, Bannerman 1949) from the Uelle area, Zaire, where Chapin also collected *P. phoenicoptera*, is considered conspecific with *V. interjecta*. *V. interjecta* has a more mesic, southern distribution in West Africa than the widespread Paradise Whydah *V. paradisaea* (subspecies *orientalis* from Sudan and Chad, *aucupum* from Nigeria to Senegal) and its foster species the Melba Finch *Pytilia melba*.

Female V. interjecta

A female whydah was tentatively identified as *V. interjecta* by her association in a pet shop with a male *V. interjecta*. Both birds were of unknown origin, imported in 1987 from West Africa through Senegal. The whydahs were photographed, and colours of bill, feet and eye were noted and compared with a reference (Kornerup & Wanscher 1968) including Methuen colour names and codes. Paradise whydahs, like most whydahs, mimic the songs of their foster species (Nicolai 1964, Payne 1973a,b, 1980, 1985, 1990). The male was tape recorded. His songs included mimetic phrases identical with the songs (*to-wit-to-wit*) and calls (*pik*) of *P. phoenicoptera* that I have recorded both in captivity and in the field at Yankari National Park, Nigeria (see Güttinger & Nicolai 1975, Crick & Marshall 1981, Payne 1985). The whydahs were observed in an aviary through 3 years. The two associated together; their foster species was not present. The male completed two cycles of moult then was saved as a study skin (UMMZ 228,180) as was the female (UMMZ 228,179).

In breeding plumage the male had long central (R2) rectrices broad (not tapered) near the tip, 304 mm in length, 26 mm high (unflattened and perpendicular to the feather shaft) measured 60 mm from the tip and 26 mm at 120 mm from the tip. The ornate tail was similar in form to the holotypes of *V. interjecta* (Berlin Museum no. 950, taken near Mbaiki, Central African Republic) and *V. longicauda* (AMNH 161,938 from Faradje, Uelle District, Zaire) and in three breeding male specimens in UMMZ taken in 1968 near Zaria, Nigeria (Payne 1985). Plumage of nape and breast was dark brownish red (Methuen 8C7), the belly was pale yellow (4A3) extending over 66% of the ventral surface. The nape was dark and the same colour extends across the upper breast, as occurs in *V. interjecta* and not in the paler Slender-tailed Paradise Whydah *V. togoensis*. The wing (flattened) is 79.6 mm, the tail (excepting the two central pairs of rectrices) is 61 mm, the bill from head is 10.1 mm, bill from nostril 7.3 mm, and the tarsus 17.1 mm. The bill was black. The tarsi were dark grey (8D3) on the lateral surfaces to pinkish (8B3) on ankle and toes. No swellings or mites were apparent; the pale colour may have been due to low hormones (colours were described after four months in captivity), though I have not noted pale colours in captive *V. p. paradisaea* kept over years.

The female plumage is streaky above. The pattern on the head has a pale buff (Methuen 5A3) crown streak over a dark brown side crown streak, bordered by a pale streak (5A3), with a dark brown streak through

TABLE 1
Variation in wing length (mm) of paradise whydahs

	Sex	n	Range	Mean ± SD
V. p. paradisaea[1]	m[3]	54	74–81	77.91 ± 1.55
V. p. paradisaea[2]		98	76–81	78.66 ± 1.64
V. p. orientalis		68	73–80	77.43 ± 1.93
V. p. aucupum		62	72–80	75.54 ± 1.88
V. interjecta		39	76–82	78.05 ± 1.52
V. togoensis		15	74–78	76.60 ± 1.59
V. obtusa		137	81–87	83.30 ± 1.47
V. p. paradisaea[1,4]	f	11	71–76	74.36 ± 1.43
V. p. paradisaea[5]		18	73–79	76.11 ± 1.81
V. p. orientalis & aucupum[6]		11	71–74	73.00 ± 1.10
V. interjecta[7]		3	74–76	75.00
V. obtusa[8]		11	77–84	79.73 ± 2.42

[1] Sudan (eastern Equatoria and eastern border), Ethiopia and Somalia

[2] Kenya to South Africa (Payne 1980)

[3] males in breeding plumage, identifiable by size and shape of central rectrices, and colours of nape and breast

[4] females identified from association with males in range of *V. paradisaea* in west and northeastern Africa and outside the ranges of *V. interjecta*, *V. togoensis* and their foster species

[5] Springbok Flats, Transvaal (cf. Payne 1971)

[6] excluding Gambia, where both *Pytilia melba* and *P. phoenicoptera* occur

[7] this paper

[8] Mwinilunga District, northwestern Zambia (cf. Payne 1971)

the eye. The face otherwise is unmarked and buffy (near 5A3). The plumage is streaked black and light brown (5D5) above and greyish orange (5B3 or darker) below on the breast, and the belly is whitish. The outer retrices have a 1–2 mm wide white border. In life the bill was light orange (6A5), the feet were pastel red (7A4), and the iris was slaty brown or "reddish brown" (8E4).

Wing length of the female *V. interjecta* is 76 mm, larger than the female *V. p. orientalis* and *V. p. aucupum* from Senegal, Nigeria, Niger, Chad and Sudan in BMNH, FMNH, Paris and Stuttgart museums, more similar to female *V. p. paradisaea* from Ethiopia and Somalia in BMNH, FMNH, USNM and Frankfurt Museum, and smaller than female *V. obtusa* (Payne 1971; Table 1). The tail is 58 mm, graduated as in other paradise whydahs; the outer rectrices are 50 mm. The bill from head is 10.4 mm, the bill from nostril 8.0 mm, and the tarsus 15.2 mm. The bill and tarsi do not differ in size from other paradise whydahs measured for comparison.

The plumage is similar to other paradise whydahs with a dark line behind the eye as in *V. obtusa*, *V. p. aucupum* and *V. p. orientalis*, and not extended into a 'C' pattern behind the ear as in *V. p. paradisaea* from east and southern Africa (Payne 1971). The edges of the dorsal feathers are greyish brown, not yellowish or buffy as in some female *V. p. orientalis* and *V. p. aucupum* in fresh plumage. The most distinctive feature of the female was the reddish colour of the legs and bill. No female *V. p. orientalis* or *V. p. aucupum* had a reddish bill; museum specimens with bill colour described on the label were "horn colour", "dark brown", "brown, tip dark, base beneath whitish" and "brown tip blackish base, l[ower] m[andible] whitish". Female *V. p. paradisaea* have blackish bills (grey in the nonbreeding season) and brownish-grey tarsi, and female *V. obtusa* have a light grey bill and grey tarsi, where colours were noted at the time of collection (Payne 1971). No female specimens from this or more recent series in UMMZ show reddish at present.

Two other female specimens are known from areas with male *V. interjecta* and its foster species *P. phoenicoptera*. One was taken in an area where male *V. interjecta* in breeding plumage is known, and no other paradise whydahs, at Korhogo, Ivory Coast, on 22 February 1968 by J. M. Thiollay (Paris Museum 1969–250). A male *V. interjecta* in breeding plumage was collected 35 km E of Korhogo (LACM 71208) on 7 October 1968, by M. Ailanijan and F. S. Blanchard; the tail is broad to the tip and measures 290 mm, the nape is brownish orange (6C8) unlike *V. togoensis*, and the breast is paler than in *V. p. aucupum*. Wing length of the Korhogo female is 74 mm. Plumage is streaky brown above, similar to that of the UMMZ female. Bill colour, not noted on the label, was reddish horn (Methuen colour was not noted) when the Korhogo female was examined in 1985; the feet were pale.

The second field specimen of a female is København Museum 25.088, taken by H. Madsen on 24 April 1927 at Bamako, Mali. The only pytilia known in this area of Mali is *P. phoenicoptera* (Hall & Moreau 1970; RBP examination of specimens in museums), and the only male paradise whydahs in full breeding plumage (and not with growing central rectrices in sheath) from southwestern Mali are *V. interjecta*. These males, in the Paris Museum, have been called *P. paradisaea aucupum* (as cited in Hall & Moreau 1970, who accepted the identifications in correspondence). In fact they are *V. interjecta* in breeding plumage; the Bamako male (Paris 623,854) has a tail of 340 mm, 80 mm longer than the longest-tailed *V. p. aucupum*. Wing length of the Bamako female is 75 mm. The female has a streaky brown dorsal plumage similar to that of UMMZ 228,179. Bill colour was not noted by the collector, but when examined in 1990 it was pastel red (Methuen 7A4), the feet were pale (Methuen 6AB2, orange white to orange grey). The reddish bill colours of the Korhogo and Bamako females are consistent with the interpretation that UMMZ 228,179 is *V. interjecta*.

Nonbreeding male V. interjecta

A nonbreeding (testes 1 mm) male paradise whydah (UMMZ 217,399) was collected along a stream 8 km NW of Zaria, Nigeria, at 11°10′N, 07°40′E, on 3 September 1968, at a site where *V. interjecta* in breeding plumage had displayed for at least two weeks. At that time the only paradise whydah species known at Zaria was *V. interjecta*, and the only pytilia was *P. phoenicoptera* (Fry 1966). *P. melba* was observed in the same locality in 1979 after further deterioration of habitat (Gartshore 1982).

The Zaria male *V. interjecta* has a wing of 76 mm, tail 58 mm and graduated with the outer rectrices 50 mm, bill 8.9 mm from head, 6.9 mm from nostril, and tarsus 15.6 mm. It weighed 20 g. The bill was orange-yellow with blackish culmen, the feet were fleshy grey, the iris was dark brown (Methuen colours were not noted). The skull was 75% unpneumatized. As Chapin (1954) and Friedmann (1960) mentioned, viduines generally do not completely pneumatize the skull. In *Vidua chalybeata*, first-year males are less than 50% and older males more than 50% pneumatized (Payne 1973b), and my captive males and females have completely pneumatized skulls only after four years. The extent of unpneumatized dorsal area of the skull suggests that the Zaria male was a yearling. The orange bill is consistent with the reddish bill colour of the captive female and the two females taken in the field, and is unknown elsewhere in the paradise whydah species complex. Wing length is like that of male *V. interjecta* in breeding plumage; wing length overlaps among forms of paradise whydah within the range of *V. interjecta* (Table 1).

In plumage the Zaria male has a whitish crown stripe bordered by black stripes, a white stripe above the eye, a light orange-grey face (5C2) with a black 'C' mark around the ear, and a worn breast lacking the brownish yellow of first-year male *V. p. paradisaea* and *V. obtusa* in fresh plumage. The back is streaked with blackish central shaft and light brown edges (5D4-5). It does not differ in pattern from nonbreeding males of other species of paradise whydahs.

Juveniles

The juvenile plumage of *V. interjecta* is unknown. A juvenile whydah (BMNH 1923.11.12.317) from Bandama in Ivory Coast may be this species or *V. togoensis*. The plumage is unstreaked light brown above (5D4) and with a greyish throat (5C3) and whitish belly. The wing is 76 mm, the tail 51 mm, and the tarsus 15.4 mm. The bill is 9.9 mm from head, 6.4 mm from nostril, and pale with a blackish tip. Specimens of paradise whydahs from Ivory Coast are few; Thiollay (1985) did not distinguish among the species. Three male specimens in breeding plumage are known, from Korhogo 35 km E (LACM 71208), Marigot (LACM 46140) and Bandama (BMNH 1923.11.12.316). The first two are *V. interjecta*, the third is *V. togoensis*. *Pytilia hypogrammica* and *P. phoenicoptera* are widespread in Ivory Coast (Thiollay 1985) and *P. melba* is known for one locality (Holyoak & Seddon 1990), but only *P. hypogrammica*, the foster species of *V. togoensis* (Nicolai 1977), is known for Bandama (Bannerman 1923; specimens in BMNH and Paris Museum), suggesting that the juvenile is *V. togoensis*. It has a reddish base of the bill and a dark tip; the original colour was not noted on the label.

The reddish bill and foot colours of female and bill of nonbreeding male *V. interjecta* may aid in identification. The characters of the females and first-year male described in the present report are consistent with recognizing *V. interjecta* as a species distinct from *V. paradisaea* and *V. obtusa*. It would be of interest to determine whether female *V. togoensis* are morphologically distinct from *V. interjecta*.

Acknowledgements

For allowing examination and lending specimens I thank the curators of the Academy of Natural Sciences of Philadelphia, American Museum of Natural History (AMNH), British

Museum (Natural History) (BMNH), Carnegie Museum, Field Museum of Natural History (FMNH), Los Angeles County Museum (LACM), Michigan State University, United States National Museum (USNM), Western Foundation of Vertebrate Zoology (Los Angeles), Mole National Park (Ghana), National Museum of Malawi (Blantyre), National Museum of Zambia (Livingstone), National Museum of Zimbabwe (Bulawayo), Museum of Comparative Zoology (Harvard), Royal Ontario Museum, Senckenberg Museum (Frankfurt), Berlin Museum (Universität von Alexander Humboldt), Museum Alexander Koenig (Bonn), Staatliche Museum für Naturkunde in Stuttgart (SMNS), Zoologisk Museum (København), Naturhistorisches Museum Wien, Zoologisch Museum (Amsterdam), Koninklijk Museum voor Midden-Afrika (Tervuren), Koninklijk Belgisch Instituut voor Natuurwetenschappen (Brussels) and Muséum National d'Histoire Naturelle (Paris). C. König (SMNS) provided photographs of the holotype of *V. p. orientalis*. Specimens in Sudan National Museum (Khartoum) were measured by S. M. Goodman. Field work was supported by the National Science Foundation and the National Geographic Society. For comments of the manuscript I thank R. E. Irwin.

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On the generic status and geographical variation of the Namaqua Prinia

by P. A. Clancey

Received 15 November 1990

The so-called Namaqua Prinia (or Warbler) was introduced to science in 1842 under the binomen *Drymoica substriata* A. Smith, on the basis of specimens collected by the describer along the Olifants R. of the western Cape, and is currently generally treated as being a species of prinia. Interest in its taxonomic status has been aroused by its recent relegation to a newly proposed genus—*Phragmacia* Brooke & Dean (1990)—on being divorced from the genus *Prinia* Horsfield, 1821, the type-species of which is *Prinia familiaris* Horsfield of Java, Indonesia. Apart from being proposed in *Drymoica* Swainson, 1827 (type-species *D. macroura* (Latham) = *Prinia maculosa* (Boddaert)), and current placing in *Prinia*, the Namaqua Prinia has on occasion, following Sharpe (1883), been referred to a further Asiatic genus, *Burnesia* Jerdon (*ex* Blyth MS), 1863, the type of which is *Prinia lepida* Blyth, which = *P. gracilis lepida* of modern usage. Both Wolters (1980) and Traylor (1986) view *substriata* as a species of *Prinia, sensu lato*, as do Hall & Moreau (1970) and Clancey (1980).

The characters advanced to justify the erection of the monotypic genus *Phragmacia* for *substriata* are that the three central pairs of rectrices are of closely comparable length, the tail profile thereby less strongly graduated than in most *Prinia* spp.; the entire tail of 10 quills is also plain, the feathers lacking the dark subterminal bar; and the rictal bristles are on the whole shorter. More significantly, the nest architecture of *substriata* differs markedly from that characterizing species of *Prinia*, this being fully detailed by Brooke & Dean. Briefly, the nest is a deep, open cup placed low down in screening riparian vegetation or among flood debris, and is not a woven oval of plant material with an upper lateral entrance as in typical *Prinia* spp. The ground-colour of the otherwise spotted eggs is also claimed as diagnostically significant in being a deep bright blue. Of some moment is that Brooke & Dean make no mention of the longer bill of *substriata* as a possible generic character, *contra* Hall & Moreau (1970), which these latter workers suggest reveals linkage between *substriata* and the spatially remote *Prinia robertsi* Benson of the frontier highlands between Zimbabwe and southern Mozambique, which, however, differs from *substriata* in having only 8 as opposed to 10 rectrices.

While readily conceding that a valid *prima facie* case for the transfer of *substriata* from *Prinia* to *Phragmacia* has been made out, the species' phylogenetic background and relationships with other closely allied Afrotropical *Prinia* spp. require to be evaluated and elucidated before its general adoption. Its generic relationship to the problematical *P. robertsi* must first be resolved, as well as to other species occurring further north in the continent seen as probably deriving from the same evolutionary radiation and inhabiting like arid country, such as *P. somalica* (Elliot). In so far as the present enquiry into the geographical variation of *substriata* is concerned, it is here treated without prejudice as a member of the genus *Prinia*.

The Namaqua Prinia is a denizen of thorn and riparian thickets, often with reeds, of both perennial and seasonally dry watercourses in the Karoo biome of the South West Arid Zone of the Afrotropics. It is distributed from the valley of the Olifants R. in the western Cape Province and the lower Orange R. drainage in southern Great Namaqualand, Namibia, and the north-western Cape (Williams 1987), east to the Great Fish R., eastern Cape, to *c*. 26°E, and the western parts of the Orange Free State (to *c*. 28°S and 27°E) (Earlé & Grobler 1987). The range is seemingly more continuous and extensive than indicated in the map in Hall & Moreau (1970). It is localized but not rare, occurring in pairs and small family parties after breeding within the limits imposed by its chosen habitat, and subsisting mainly on insects and on small fruits and seeds (Table 1 in Brooke & Dean).

The sexes are closely similar, the female ranging smaller than the male, with a shorter tail. There is no assumption of a distinct nuptial mode of dress as in many *Prinia* spp., this in part a correlate of the open cup-shaped style of nest it constructs. A complete moult (contour plumage, wings and tail) is effected from April through to June, the species commencing to breed from the latter part of August to about January. The juvenile is seemingly undescribed, but one dated 13 November 1956, from Fraserburg–Beaufort West in the Karoo, resembles the adult but is lighter and buffier above, the white ventral surface with obsolete breast streaking, while the apices of the tail-feathers are discoloured and ochre tinged. The tail is shorter than in adults, measuring only 59 mm.

The Namaqua Prinia is not well represented in museum collections, and the possibility of its showing any geographical variation has seemingly not been investigated hitherto. A recent study of such material as exists in southern African institutions has revealed that the species varies sufficiently in coloration as to be viewed as polytypic and its populations grouped into two formal subspecies. Variation of subspecific import affects the upper-parts, which vary from a warm fulvous brown in the singularly arid northwest of the range to a duller olivaceous wood brown in the south and east. Ventrally, there is appreciable variation in the whiteness of the fore-throat and breast and the buffiness of the flanks, crissal surfaces and under tail-coverts, but, strangely enough, there is no demonstrable difference in mensural characters throughout the entire range. The colour variation is closely correlated with the general colour of the substrate and rainfall levels, some populations occurring in country which may experience little or no rain some years (as in the northwest) to as much as 500 mm annually elsewhere. Two races may be recognized, as laid out hereunder:

Prinia substriata substriata (Smith)

Drymoica substriata A. Smith, *Illustr. Zool. South Africa,* Aves, 1842, pl. 72, fig. 1, and text: banks of the Olifants R., western Cape Province, the type-locality restricted to Clanwilliam.

Dorsal surface light Dresden Brown (Ridgway 1912), reddening slightly over the rump. Ventral ground-colour cold white, the breast narrowly streaked with greyish black; lower lateral body surfaces, flanks, crissum and under tail-coverts dull Tawny-Olive. Tail plain umber brown, lightening laterally.

Measurements. Wings of 10 ♂♂ 52.5–57.5 (55.5), s.d. 1.79; culmens from skull 15–16 (15.2), s.d. 0.35; tarsi 20–21.5 (20.9), s.d. 0.69; tails 67–75 (69.7), s.d. 2.26. Wings of 10 ♀♀ 50–54 (52.2), s.d. 1.33; culmens 15–17 (15.5), s.d. 0.64; tarsi 19.5–22 (20.7), s.d. 0.75; tails 60–68.5 (64.7), s.d. 2.52 mm.

Material examined. 37. *Cape Province*: near Liebendal (Olifants R.), Klaver, Vanrhynsdorp, Sutherland, Fraserburg, Beaufort West, Victoria West, Dwyka, Prieska, Murraysburg, Graaff-Reinet, Seekoegat (33°05′S, 22°30′E), Georgida (Willowmore), Traka, Oudtshoorn; *O.F.S.*: Glen, Oranjekrag, Allemansdrift. Rainfall generally 120–500 mm p.a.

Range. Southern Little Namaqualand and the middle and lower Olifants R. drainage, western Cape, through the Karoo regions to reach the mid-Orange at Prieska, the Orange Free State south of 28° to 27°E, and in the Cape to the Great Fish R. valley at *c.* 26°E, and in the south to Oudtshoorn and further east to Willowmore. Sedentary.

Remarks. Hall & Moreau (1970), in their *Atlas of Speciation,* show a major cluster of records of *P. substriata* for the northwestern Cape to the north of the Olifants R., most of which appear to be of wrongly determined specimens of juvenile *P. maculosa* in a southern African collection.

Prinia substriata confinis subsp. nov.

Type. ♂, adult. Vioolsdrif (formerly Goodhouse), lower Orange R., north-western Cape, at 28°53′S, 18°15′E. 16 August 1937. Collected on Barlow/Transvaal Museum Expedition. In the collection of the Transvaal Museum, Pretoria, T.M.Reg. No. 21717.

Description. Upper-parts more fulvous than in *P. s. substriata*, being a light ochreous Brussels Brown (August/September), *versus* greyish Dresden Brown at the same time. Ventrally warmer white, with finer greyish-black breast-streaking, and lower lateral and crissal surfaces and under tail-coverts pale Cinnamon-Buff as against dull Tawny-Olive. Similar in size.

Measurements. Wings of 10 ♂♂ 53–57 (55.1), s.d. 1.39; culmens 15–16.5 (15.6), s.d. 0.53 ($n=8$); tarsi 21–22 (21.4), s.d. 0.56 ($n=8$); tails 65–75 (69.7), s.d. 2.50. Wings of 4 ♀♀ 51.5–54 (52.6); culmens 15.5; tarsi 20.5–21.5 (20.8); tails 62.5–67.5 (64.3) mm.

Material examined. 16. *Cape Province*: Vioolsdrif (Goodhouse), Kenhardt, Upington. Rainfall from frequently nil to 120 mm p.a.

Range. Arid lower reaches of the Orange R. from about its confluence with the Great Fish R. of Namibia and the Richtersveld, east to Bushmanland, the Kenhardt district and southern Gordonia at Upington to 22°E, east of which it intergrades with the nominate race (as at Prieska on the mid-Orange).

Measurements of the type (mm). Wing (flattened) 55, culmen from skull 16.5, tarsus 22, tail 70.

Etymology. Confinis—Latin, adjacent to.

Remarks. Hoesch & Niethammer (1940) give the weights of 3 ♂♀ taken in January at Goodhouse by Niethammer as 9, 9.5 and 10.5 g.

The colour variation here described in respect of the arid lower Orange R. population of *P. substriata* parallels closely that recently shown to be present in a second sympatric endemic warbler, namely, the Cinnamon-breasted Warbler *Euryptila subcinnamomea* (Smith), which likewise had not been previously closely studied (Clancey 1990). *E. s. petrophila* was, like *P. s. confinis*, proposed from the desertic lower Orange valley.

Acknowledgements

I am indebted to the Ornithologists of the East London Museum (C. J. Vernon) and of the Transvaal Museum, Pretoria (Dr A. C. Kemp) for the loan of their holdings of *P. substriata*; also to the Directors of the South African Museum, Cape Town, and the National Museum, Bloemfontein, O.F.S.

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Types, type localities, and variation in some races of the Colasisi or Philippine Hanging Parrot *Loriculus philippensis*

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Received 20 November 1990

The Colasisi or Philippine Hanging Parrot is a highly variable species, with 11 races recognized by duPont (1971). The nomenclature of the populations of the Visayan islands in the central part of the archipelago and of the southern island of Mindanao is dependent upon the exact geographical origin of the various type specimens and is complicated by confusing early discussions and by hitherto uncorrected errors. These aspects of nomenclature will be reviewed, along with a discussion of the number of Visayan races that merit recognition. Variation within the species in certain other islands will also be mentioned.

The Eastern and Central Visayas and their races

The Visayas lie between Luzon and Mindoro to the north and Mindanao to the south. Samar and Leyte (and small satellite islands) form the Eastern Visayas; the Colasisi of these islands was named *Loriculus* [*p.*] *worcesteri* by Steere (1890). Specimens from Bohol, southwest of Leyte and politically part of the Central Visayas, have also been assigned to *worcesteri* (Rand & Rabor 1960); this would be consistent with the avifaunal relationships in general for Bohol, which shares 19 subspecies with Samar and Leyte while having five endemic subspecies of its own (Parkes 1973). However, Parkes (unpublished notes) compared 9 adult male and 7 adult female Colasisis from Bohol with 2/2 from Samar and 4/4 from Leyte, and found what appear to be consistent characters differentiating the Bohol series. Comparison of Bohol specimens with a larger series from Samar may well justify naming the Bohol population as an additional subspecies.

Steere (1890) gave Samar and Leyte as localities for *worcesteri* without specifying a holotype; his original series included birds from both islands. Warren (1966) stated that the British Museum (Natural History) holds 4 syntypes of *worcesteri*, of which she selected for her type list (an action that she pointed out was not to be considered a lectotype designation) a male from Catbalogan, Samar, 8 April 1888 (inadvertently omitting its register number, 1896.6.6.1041). This was apparently in accordance with her policy, stated in her introduction, of selecting for listing out of a syntypical series "the one which has been regarded as the holotype, because of a manuscript indication or a subsequent publication". She mentioned the fact that Hachisuka (1934) had listed the Catbalogan specimen as "the type", and the information provided to Parkes (1973) indicated that the BM(NH) staff also considered this specimen to be "the type". Although Hachisuka did not use the word "lectotype" for BM(NH) 1896.6.6.1041, his designation appears to be valid under Article 74 of the International Code of Zoological Nomenclature. This would be important if the populations of Samar and Leyte had differentiated subspecifically, but as Parkes (1973) pointed out, there is no consistent difference between *Loriculus* specimens from these two islands.

The small island of Siquijor is politically part of the Western Visayas, but as the southeasternmost island of this group it is actually as close to the Central Visayas. The endemic race *L. p. siquijorensis* Steere is well-marked and not controversial, but is thought to be extinct (Rand & Rabor 1960). The same is true of the endemic race *chrysonotus* Sclater of the Central Visayan island of Cebu.

The Western Visayas and their races

The Western Visayas include the main islands of Panay, Negros and Guimaras, plus the more northerly Romblon Group (Romblon, Sibuyan and Tablas) and Masbate. The current treatment of the Colasisis of these islands (duPont 1971, Forshaw 1989) assigns the populations of the Romblon Group to *L. p. bournsi* McGregor, 1905; Masbate, Panay and Ticao (a small island north of Masbate) to *L. p. panayensis* Tweeddale, 1877; and Guimaras and Negros to *L. p. regulus* Souancé, 1856. Nomenclatural (as opposed to taxonomic) complications are centred on the names *regulus* and *panayensis*, plus *occipitalis* Finsch, 1874.

Loriculus panayensis Tweeddale versus *L. regulus* Souancé

Tweeddale (1877a) gave Ilo Ilo, the main trading port of Panay, as the type locality of his *panayensis*, and he has been followed in this by all subsequent authors. Tweeddale's own publication, however, shows that this is incorrect. He quoted an extract from a notebook kept by J. Murray aboard H.M.S. *Challenger* as follows: "Ship arrived in Ilo Ilo on the 28th [October 1874], at 5 p.m. On the 30th the following birds were shot. These are all from the island opposite the town." Tweeddale then listed 12 species, one of which is *Loriculus panayensis*, which he formally described two pages later.

"The island opposite the town" of Ilo Ilo is Guimaras. The correct citation of the type locality of *panayensis* Tweeddale should therefore be " 'Ilo Ilo' = Guimaras". Delacour & Mayr (1946), duPont (1971) and other authors have assigned the Guimaras population to *L. p. regulus* of Negros. If this were correct, then *panayensis* would become a synonym of *regulus*, and another name would have to be found for the birds of Panay, Masbate, and Ticao—assuming that those of Panay and Guimaras do indeed belong to separate subspecies. This question will be addressed later.

Coryllis occipitalis Finsch versus *Loriculus regulus* Souancé

The history of the name *occipitalis* (which was omitted from the synonymies of McGregor 1909, Hachisuka 1934, and duPont 1971) and that of *regulus* Souancé, 1856, are intertwined and convoluted. The supposed type specimen of *regulus*, BM(NH) 1859.11.22.33, was a male of unknown locality. Another specimen in the BM(NH) (1842.2.15.90), collected by Cuming and labelled "Mindanao", was at first thought by Finsch (1868) to belong to Souancé's "species" *regulus*. Sclater (1872), after having examined a series of *Loriculus* in Dr A. B. Meyer's collection, found that specimens from Negros and Panay best fitted the description of *regulus*, and he applied the name to the populations of those islands. Later, Finsch (1874) examined a pair of Negros specimens and agreed that these were true *regulus*, and that the BM(NH) "Mindanao" specimen (1842.2.15.90) represented an undescribed form, which he named *Coryllis occipitalis*.

Thus far *regulus* had been attributed to Negros and Panay. Inferential restriction to Negros was effected by Tweeddale (1877a) through his description of *panayensis* (which, as we have seen, was actually from

Guimaras), comparing it to "*regulus*, ex Negros". Later Hachisuka (1934) formally designated Negros as the type locality of *regulus*, stating that the "type specimen" was in the British Museum. Unfortunately Tweeddale, in describing *panayensis*, had before him (as is evident from his description) an immature male and a juvenile female, so his supposed diagnostic characters are invalid.

In the same paper in which he described *occipitalis*, Finsch (1874) noted a BM(NH) specimen that, like his type of *occipitalis*, had been labelled as "*regulus*". Salvadori (1891, p. 523) stated that this specimen was "the type, or a typical specimen, of *L. regulus*, Souancé, of the Massena Collection, received through the dealer Parzudaky of Paris." However Salvadori erred in listing this specimen on the next page (524) as "one of the types of *C. occipitalis*, Finsch" (this error later being repeated by Warren 1966). Finsch was of the opinion that this specimen (BM(NH) 1859.11.22.33) was different from both *regulus* and *occipitalis*, and was near *chrysonotus* Sclater from Cebu. Salvadori (1891), however, demonstrated that this specimen, obtained from the Massena collection, was in fact the holotype of *regulus*. He went farther and synonymized *occipitalis* (as represented by the Cuming holotype) with *chrysonotus*, but without overtly stating that the Cuming locality "Mindanao" attached to that specimen was erroneous; Cuming's localities are known to be untrustworthy (Parkes 1961). Dickinson examined this specimen in June 1990, and agrees that it is referable to *chrysonotus*, thus verifying its provenance as Cebu rather than Mindanao and confirming the status of *occipitalis* as a synonym of *chrysonotus*.

What is the true range of *Loriculus philippensis regulus* Souancé?

Having now determined that Negros is the *terra typica* of *regulus*, the question arises as to the full range of this subspecies. As mentioned earlier, duPont (1971) included only the populations of Negros and Guimaras in *regulus*, those of Romblon, Sibuyan and Tablas in *bournsi* (type locality Sibuyan), and those of Masbate, Panay and Ticao in *panayensis*. We have already seen that the type locality of *panayensis* is actually Guimaras, not Panay, meaning that if the birds of Guimaras are separable from those of Masbate, Panay and Ticao, a new name would have to be found for the latter.

Parkes examined a series of Colasisis representing the combined resources of CM, AMNH, USNM, DMNH, MMNH and FMNH, six of the most important American collections of Philippine birds. Many of the series consisted primarily of immature birds, useless for comparisons of colour markings. The total number of *adults* seen was as follows: Negros, 36; Guimaras, 3; Romblon, 1; Sibuyan, 15; Tablas, 10; Masbate, 12; Panay, 2; Ticao, 2. Although the material from some of the islands was undesirably limited, it quickly became evident that the subspecies characterizations relative to the crown and hind neck colours given by duPont (1971) would not hold good. The amount of red and yellow on the crown and nape is highly individually variable in adults from these islands. It became clear that the name *regulus* (with *panayensis* as a synonym) can be used for the birds of all of the central and western Visayas north and west of Cebu, *except* Sibuyan, where the name *bournsi* will continue to apply. Although Sibuyan lies close to Romblon and Tablas (and somewhat farther from Masbate and Panay), the good series from Sibuyan clearly demonstrates the distinctiveness of *bournsi*. In that subspecies, the yellow colour of the crown in adult males is always less than in any specimens of the combined *regulus* series. Furthermore, in none of the adult females of *bournsi* is there any yellow adjoining the red crown patch. This is variable in *regulus*, but even in those females that lack a distinct yellow extension to the red crown patch, the posteriormost row of red feathers is tinged with yellow; in Sibuyan birds the red comes to a sharp border with the green of the back. There is also a slight but perceptible difference in the general dorsal colour, with *bournsi* the darkest, least yellowish green when compared with all others of this group.

The correct name for the Colasisis of Mindanao

In 1868 Finsch had named *Coryllis hartlaubi* from Mindanao (this name was erroneously attributed to Tweeddale 1877b by McGregor 1909; duPont 1971 correctly attributed it to Finsch but with a citation to Tweeddale's 1877b paper). Finsch's action in providing this name is difficult to explain, as he had available the material in the BM(NH), which included the type specimen of *apicalis* Souancé, 1856, from Mindanao, entered in the BM(NH) register in 1859. Finsch was apparently ready to believe that more than one species of *Loriculus* could be found on Mindanao, as in 1868 he listed birds from this island under both *regulus* and *hartlaubi*. In his 1874 paper, having determined that the BM(NH) "*regulus*" specimen alleged to be from Mindanao was not that form, he named that specimen "*occipitalis*" without mentioning his own *hartlaubi*, also attributed to Mindanao!

Warren (1966) considered BM(NH) 1842.2.15.34 to be a syntype rather than the holotype of *Coryllis hartlaubi* Finsch. It is true that Finsch listed two additional specimens under this name, but it is reasonably clear from his wording that he was basing his new species on the first specimen on his list; Tweeddale (1877b) was of the same opinion, and indeed might be said to have inferentially designated BM(NH) 1842.2.15.34 as a lectotype. This specimen, listed as "*f*. Ad. sk." by Salvadori (1891), is an adult female according to Warren (1966). As it was, like BM(NH) 1859.11.22.33, a Cuming specimen attributed to "Mindanao", one might conjecture that it was collected *with* that specimen on Cebu and was thus actually an example of the Cebu subspecies currently called *chrysonotus* Sclater, 1872. In that case the name *hartlaubi* Finsch, 1868 would replace *chrysonotus* for the Cebu population. Three points militate against that interpretation. The two specimens were catalogued at the BM(NH) 17 years apart, making it at least unlikely that Cuming had collected them together. Sharpe (quoted by Tweeddale 1877b) compared a genuine Mindanao specimen with the Cuming type and found them to agree. And, finally, Finsch specifically noted that *hartlaubi* lacked an orange spot on the nape, a character that is typical of *chrysonotus* in spite of Finsch's later (1874) statement to the contrary (see colour plate on p. 347 of Forshaw 1989).

Salvadori (1891) erred in listing specimen *a* of *Loriculus apicalis* (BM[NH] 1859.11.22.35), the "type" (=syntype *fide* Warren 1966) of that "species", as also being "one of the types of *C. hartlaubi*, Finsch." That specimen was obtained by the BM(NH) from the Massena collection, whereas all three of the specimens mentioned by Finsch in his description of *hartlaubi* were obtained from Cuming.

There seems to be no reason to alter the current treatment of *hartlaubi* as a junior synonym of *apicalis* Souancé, 1856, the correct name for the Colasisis of Mindanao.

Acknowledgements and museum acronyms

We are grateful to the authorities of the American Museum of Natural History (AMNH), Bell Museum of Natural History, University of Minnesota (MMNH), Delaware Museum of Natural History (DMNH), Field Museum of Natural History (FMNH) and United States National Museum of Natural History (USNM) for allowing Parkes to examine, and in some instances borrow, specimens to supplement those in the Carnegie Museum of Natural History (CM). Dickinson received important help toward this study from Graham Cowles, Derek Read and Michael Walters at the British Museum (Natural History), Tring (BM[NH]).

Summary

Several nomenclatural and taxonomic questions relative to the populations of the Colasisi *Loriculus philippensis* of the central Philippines are resolved. The name *worcesteri* Steere applies to those of Samar and Leyte; those of Bohol are somewhat differentiated and possibly separable. By the valid designation of Hachisuka (1934), BM(NH) 1896.6.6.104 from Samar is the lectotype of *worcesteri*. The type locality of *panayensis* Tweeddale is Guimaras rather than Ilo Ilo, Panay. BM(NH) 1859.11.22.33, from an unknown locality, is the holotype, not a syntype, of *regulus* Souancé, and Hachisuka (1934) validly restricted the type locality of *regulus* to Negros. Contrary to previous authors, BM(NH) 1842.2.15.90 is the holotype, not a syntype of *occipitalis* Finsch, and is not a syntype of *regulus*. Although allegedly from Mindanao, it matches *chrysonotus* Sclater from Cebu, of which *occipitalis* is thus a synonym. The range of *regulus* is redefined, and includes Guimaras, Masbate, Negros, Panay, Romblon, Tablas and Ticao; *panayensis* Tweeddale is a synonym. The subspecies *bournsi* McGregor is valid, but is confined to Sibuyan. The correct name for the Colasisis of Mindanao is *apicalis* Souancé, with *hartlaubi* Finsch as a synonym.

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BOOKS RECEIVED

Sibley, C. G. & Ahlquist, J. E. 1991. *Phylogeny and Classification of Birds: a Study in Molecular Evolution.* Pp. xxiii+976. Yale University Press. ISBN 0-300-04085-7 (alk. paper). £60. 26 × 18.5 cm.

Sibley, C. G. & Monroe, B. L., Jr. 1991. *Distribution and Taxonomy of Birds of the World.* Pp. xxiv+1111. Yale University Press. ISBN 0-300-04969-2. £75. 28.5 × 22 cm.

Since 1980 Sibley and Ahlquist have published a series of papers on the classification of various groups of birds based on DNA-DNA hybridization, a method which produces a quantitative measurement of the proportion of genetic material common to any two taxa that one may wish to compare, at any level from the subspecies to the order or above. The method is technically sophisticated, and has led to some controversy of a highly technical nature; the 31 papers (a few of them with additional co-authors) are scattered through many different journals and books. The result has been a revolutionary classification of birds, but it has been hard for ornithologists who are not active in this field of research to get an overall view, and to know what has been established with a fair degree of certainty, and what is still controversial. The great biological, evolutionary interest of the subject hardly needs stressing. Few would disagree that, in animals at least, classification should reflect phylogeny. In Sibley's words, "there is but one true phylogeny", and he gives strong reasons for thinking that DNA-DNA hybridization has revealed it much more accurately than any other method hitherto available. (Though the authorship is joint, the text is by Sibley, Ahlquist being responsible for the laboratory work and much of the data analysis.)

The first of these two massive volumes is a thorough, extremely clearly written, synthesis of all the DNA-DNA hybridization work. It is also much more than that, and to appreciate its scope a summary of the contents is necessary. The book is divided into two main parts. Part I begins with 8 chapters dealing with DNA and the history of our present state of understanding of its structure and function as the genetic material in all higher animals and plants. Then follows a short chapter reviewing comparative DNA studies carried out to date on all groups of organisms, from viruses to vertebrates. Chapters 10 and 11 describe the laboratory methods used by the authors in their own work, and their methods of analysis (highly technical, but important for anyone working in this field). Chapters 12 and 13 deal with the tempo of molecular evolution and the demographic factors that affect it, including a discussion of the evidence that, in birds, the tempo is related to generation time, which itself is related to the age of first breeding. This is important in interpreting the DNA results. From their earlier studies, Sibley had concluded that the rate of molecular evolution was practically constant in all birds, but these had concentrated on passerines, nearly all of which breed when one year old; later analyses of non-passerines, in which maturity may be delayed for several years, gave evidence of slower rates (just as, in a more extreme case, rates are much slower in elephants than in *Drosophila*).

Chapter 14 (62 pages) is an extremely useful historical survey of previous classifications of birds, from Linnaeus onwards, with special attention to the great 19th century anatomists (Huxley, Sundevall, Garrod, Fürbringer, Gadow and others), whose morphological researches, especially Gadow's, still provide the basis for the generally accepted current classification enshrined in such works as Peters' *Check-list*. A main purpose of this chapter is to show that it has not proved possible to work out the phylogeny of birds from comparative anatomy; even the most thorough studies have been unable to avoid the pitfalls set by convergent and parallel evolution. In spite of this — and not surprisingly, as stability is a great convenience — the current classification is deeply entrenched, and, to quote, "the power of tradition is so strong that proposals for changes in the classification of birds have little prospect of acceptance unless accompanied by overwhelming evidence that they represent a closer approach to a 'natural' classification. To provide the sense of confidence that is required to surmount the hurdles of tradition and usage it is necessary to present new, convincing data and also to show that the evidence used by Gadow was not beyond question."

Chapter 15, on the principles and methods of classification, is of key importance. It sets out Sibley's reasons for basing his classification solely on the DNA-DNA hybridization results; in other words, for adopting a cladistic, or phylogenetic, classification, and not one that takes into account degree of morphological divergence. Here Sibley may speak for himself: "The adherents of the traditional, or so-called evolutionary, school accept the view expressed by Darwin . . . and advocate an eclectic selection of evidence as the basis for a classification that will express both the phylogeny (clades) and the degree of morphological specialization of lineages (grades). . . . There is, of course, a relationship between phenotype and genotype, but morphological characters evolve at many different rates and the relationship between morphology and phylogeny is neither simple nor direct. To the human eye closely related taxa may look so different that they are judged to merit recognition as members of different higher categories, and distantly related but convergently similar species may be thought to be close relatives. With this method art replaces science and the subjective evaluations of the taxonomist are the only criteria for the erection of categories and their arrangement in a classification. Intuition is not a substitute for measurement, and the failures of the eclectic school litter the historical landscape of avian systematics."

Chapter 16, entitled "Classification of birds based on DNA-DNA hybridization" (its substance was first published in *Auk* 105 (1988): 409–423), is quite short. After some explanatory statements it tabulates the Sibley and Ahlquist classification of Recent birds down to the level of the tribe. One of the major innovations in this classification is the number of taxonomic categories used. The phylogeny contains so many dichotomies (branching points of lineages) that the conventional hierarchy of order, suborder, family, subfamily etc. does not provide enough information. To deal better with this situation—though not ideally, for an impossibly large number of categories would be needed if a classification were to reflect the phylogeny perfectly—a number of new categories are used at the class and ordinal levels, based on the prefixes super-, sub-, infra- and parv-; thus ordinal categories are superorder, order, suborder, infraorder and parvorder. (It is a pity that the inelegant term 'parvclass', resulting from this system, could not have been avoided.) The other major innovations are in the details of the classification itself, though 'detail' may seem an inappropriate word for such changes as: treating the auks as a subfamily of the Laridae, the New World vultures as a subfamily of the Ciconiidae, the orioles and cuckoo-shrikes as together constituting a tribe within the subfamily Corvinae of the family Corvidae, the mockingbirds as a tribe within the family Sturnidae, or the New World icterids as a tribe within the Emberizidae. Even more surprisingly, "the DNA data indicate that the Piciformes are the descendants of what may be one of the oldest lineages in the avian tree and that they are far from the passerine stem". They are placed near the beginning of the classification, immediately after the Anseriformes and Turniciformes (the latter still of uncertain affinities). Other such examples could be given; but one should also stress that much of the classification is in good agreement with classifications based on comparative morphology, and some major changes make excellent sense from a zoogeograhical viewpoint. Thus many of the diverse endemic passerines of Australia, which on the basis of morphology have been linked with Old World groups which they most closely resemble, are now convincingly shown to be part of a major monophyletic adaptive radiation within Australia.

Part II of the book (428 pages) deals in detail with each group of birds. It also includes very useful historical notes on previous classifications, like those in chapter 14 but at lower taxonomic levels. The immense amount of information presented here cannot be summarized in any meaningful way. The following extracts, discussing the DNA evidence for the Sylviidae, will give an idea of the treatment (Δ[delta value] is the measure of genetic distance between taxa, and hence an indication of the length of time since their lineages branched). "The DNA data show that the family Sylviidae is not closely related to the Muscicapidae, but that these two families belong to lineages that diverged at Δ11.7, probably ca. 20–30 MYA [million years ago]. The branch between the Sylvioidea and the Muscicapoidea is actually older than that between the Sylvioidea and Passeroidea. . . . The results of these and subsequent comparisons indicate that *Chamaea* is a babbler and that its lineage branched from the sylviines and timaliines at Δ7.2. In Fig. 381 the *Chamaea* branch is actually 7.2 from the sylviines and 7.5 from the timaliines. These differences may not reflect the exact branching sequence among these three taxa, but it seems likely that the Wrentit diverged from its Asian relatives about 15–20 MYA. . . . Our data for the species of *Sylvia* are incomplete and the delta values between some of the species are large enough to suggest splitting the genus. At this time we conclude only that *Sylvia* is most closely related to the babblers, and that *Parisoma* is a synonym of *Sylvia*."

The final chapter is a short but important one of only 7 pages, on "Historical geography: patterns of distribution in space and time". It deals with the major geological events which offer the best means of calibrating the 'avian DNA clock'. Chief among these is the opening up of the Atlantic Ocean, leading to the splitting of South America from Africa some 80 MYA. Almost certainly, it was then that the lineages leading to the present-day ostriches and rheas split, and this is taken as the basis for calibrating the delta values between ratite taxa with absolute age. Other geological events affording a means of calibration include those leading to the formation of Australia and New Guinea, and those affecting the land-bridges between Eurasia and North America and between North and South America. Datings based on these events are in many cases tentative, but there are no major inconsistencies that would throw doubt on the general validity of the method.

There is no doubt that the results of DNA-DNA hybridization have led to very many improvements in the classification of birds which will be incorporated in future works of reference. There are two reasons why its adoption *in toto* is less certain, at any rate in the near future, and why there is bound to be controversy. One is that many ornithologists will be reluctant to jettison the traditional classification, even though it is known to be less than perfect, so long as there is any suspicion that the DNA method may, perhaps only in some cases and for reasons not yet apparent, have given a wrong answer. The second is that, even if the phylogeny based on the DNA method is accepted as substantially correct, many systematists will be reluctant to accept Sibley's strict cladism, that taxonomic categories should be based solely on date of branching, ignoring degree of morphological divergence. Though scientifically less defensible than cladism, the traditional school of thought does embody a 'common sense' element. Does classification no longer have any descriptive function? The disagreement between the cladists and traditional systematists seems bound to continue for some time.

Sibley and Monroe's *Distribution and Taxonomy of Birds of the World* is quite different in scope and intention. Using the classification derived from the DNA work, but with only a single paragraph devoted to it, it sets out in summary form the names (scientific and English), habitats and ranges of the world's birds (the ranges in sufficient detail for rough mapping), with brief taxonomic and such other information as is necessary in cases where species limits are uncertain or problematical. The result is the most complete and useful annotated list of birds of the world available, fully referenced and indexed. Nine thousand six hundred and seventy-two species are recognized, and a new numbering system for species introduced. The authors have given considerable attention to English names. They use some that many will find unacceptable, e.g. Bearded Parrotbill for *Panurus biarmicus*, but they also give alternatives to their own preferences and, as they state in the introduction, do not expect their selection to be final.

The amount of work embodied in these two books is awesome. The first will be an essential tool and work of reference, and a stimulus, to avian systematists for years to come; the second will be an essential reference, working tool and quarry combined, for all ornithologists concerned with the lower taxonomic levels—species and superspecies—and their distributions. Together they constitute the most important publication on the classification of birds to have appeared in recent decades.

Erratum. In *Bull. Brit. Orn. Cl.* 110(4), p. 173 (last paragraph), the second sentence should read: "In comparison with *S. maxillosus*, the males [not females] of the new subspecies have shorter wings and tails, while the females [not males] have larger bills". In Table 1 (p. 174), the correct values for the t-test, *parkesi* × *maxillosus*, reading from top to bottom, are: <0.05, N.S., <0.05, N.S., N.S., <0.05.

NOTICE TO CONTRIBUTORS

Papers, from Club Members or non-members, should be sent to the new Editor to be nominated at the AGM, Dr D. W. Snow, Old Forge, Wingrave, Aylesbury, Bucks HP22 4PD, U.K., and must be offered solely to the *Bulletin*. They should be typed on one side of the paper, with **treble**-spacing and a wide margin, and submitted in duplicate. The style and lay-out should conform with usage in this or recent issues of the *Bulletin*. Informants of unpublished observations should be cited by initials and name only, e.g. "... of grass (C. Dieter)", but "P. Wee informs me that ...". A limited number of photographic illustrations in black-and-white may be published annually at the Editor's discretion. Authors are requested to give their title, initials, name and full address at the end of the paper.

An author wishing to introduce a new name or describe a new form should append **nom., gen., sp.** or **subsp. nov.,** as appropriate, and set out the supporting evidence under the headings "Description", "Distribution", "Type", "Measurements of type" and "Material examined", plus any others needed.

A contributor is entitled to 10 free offprints of the pages of the *Bulletin* in which his contribution, if one page or more in length, appears. Additional offprints or offprints of contributions of less than one page may be ordered when the manuscript is submitted and will be charged for. Authors may be charged for proof corrections for which they are responsible.

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CORRESPONDENCE

Correspondence about Club Meetings and on all other matters should go to the Hon. Secretary, Mrs A. M. Moore, 1 Uppingham Road, Oakham, Rutland LE15 6JB, U.K.

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The *Bulletin* is despatched from the printers on publication and is sent by Surface Saver Postal Services to all European destinations outside the U.K. and by Air Saver Postal Services to destinations outside Europe. Those whose subscriptions have not been received by the beginning of a month of publication will have their copies despatched by surface mail, after their current subscription has been paid.

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Mrs A. M. Moore *(Hon. Secretary)* (1989)
R. H. Kettle (1988)
Cdr M. B. Casement, OBE, RN (1990)
D. Griffin *(Vice-Chairman)* (1990)
S. J. Farnsworth *(Hon. Treasurer)* (1990)
Revd. T. W. Gladwin (1990)
Dr A. Tye (1990)

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Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

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ISSN 0007–1595

Bulletin of the

British Ornithologists' Club

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Edited by
Dr D. W. SNOW

Volume 111 No. 3 September 1991

FORTHCOMING MEETINGS

Tuesday, 22 October 1991. Dr R. A. Cheke will speak on **"Birds of Togo".** Dr Cheke works on tropical pests at the Natural Resources Institute of the Overseas Development Agency. He has studied birds in Africa for nearly 25 years, first visiting Togo in 1979. He returned there annually until 1990 to work on the biology and control of vectors of onchocerciasis.

Those wishing to attend should notify the Hon. Secretary by Tuesday, 8 October 1991.*

Tuesday, 26 November 1991. The Chairman, Mr R. E. F. Peal, will speak on **"Birds of N.W. Morocco".** Ronald Peal has been a member of the Club since 1963 and became a member of the Committee in 1969. He held the post of Honorary Secretary from 1971 until 1989 when he was elected Chairman. It will be remembered that he published a survey of Wryneck in Britain in 1968. He has had close connection with the area of N.W. Morocco extending over 25 years.

Those wishing to attend should notify the Hon. Secretary by Tuesday, 12 November 1991.*

Tuesday, 21 January 1992. The Honorary Secretary, Mrs A. M. Moore, will speak on **"Ornithology in the Search for the Course of the Niger".**

Tuesday, 18 February 1992. Dr David Harper, of Sussex University, will speak on **"Why is Robin behaviour so variable?".**

Tuesday, 7 April 1992. Dr Carlo Violani of the Università di Parvia, Milan, will speak on the 18th century Italian naturalist **Giovanni Antonio Scopoli** and his influence on Italian ornithology.

Meetings are held in the Senior Common Room, Sherfield Building, Imperial College, London SW7 at 6.15 pm. for 7 pm. A plan showing Imperial College will be sent to members on request.

*Late acceptances and cancellations can usually be taken up to the Thursday morning preceding a meeting, although members are asked to accept by 14 days beforehand as arrangements for meetings have to be confirmed with Imperial College well in advance.

If you accept and subsequently find you are unable to attend please notify the Hon. Secretary, 1 Uppingham Road, Oakham, Rutland LE15 6JB (tel. 0572 722788) as soon as possible as the booking can often be offered to another member.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 111 No. 3 Published: 20 September 1991

The eight hundred and ninth meeting of the Club was held on Tuesday, 9 April 1991 in the Ante-Room, Sherfield Building, Imperial College, South Kensington, London at 6.15 p.m., 34 Members and 12 guests attended.

Members attending were: R. E. F. Peal (*Chairman*), Professor C. H. Fry (*Speaker*), M. A. Adcock, Miss H. Baker, K. F. Betton, P. J. Bull, Cdr M. B. Casement, RN Retd, Dr R. A. Cheke, I. D. Collins, Dr H. Q. P. Crick, M. J. Earp, J. H. Elgood, S. J. Farnsworth, G. D. Field, C. Helm, P. Hogg, R. H. Kettle, Rev. G. K. McCulloch, Dr J. F. Monk, Mrs A. M. Moore, Dr G. Morel, Dr M-Y. Morel, R. G. Morgan, Mrs M. Muller, P. J. Oliver, J. G. Parker, R. C. Price, A. J. Randall, Dr R. Self, P. J. Sellar, R. E. Sharland, N. H. F. Stone, A. R. Tanner, Dr A. Tye.

Guests attending were: Mrs B. Adcock, Mrs J. Bull, Mrs F. Farnsworth, Miss R. Harris, Miss K. Hoff, Mrs I. McCulloch, Mrs E. N. Madsen, J. J. Madsen, Mrs D. C. Monk, P. J. Moore, Mrs H. Price, Mrs H. Tye.

After supper Professor C. Hilary Fry, who was making a short visit to the UK from Oman, spoke on *Alcedinidae*. He gave a comprehensive, illustrated, review of the 87 species of the three sub-families of kingfishers. He demonstrated the extraordinary distribution and range of the species from the most primitive to the most highly evolved and specialised. His happy facility for sharing his detailed knowledge with his audience was much appreciated.

ANNUAL GENERAL MEETING

The Annual General Meeting of the British Ornithologists' Club was held in the Senior Common Room, Sherfield Building, Imperial College, London SW7 on Tuesday, 21 May 1991 at 6.10 p.m. 16 Members were present.

The Minutes of the Annual General Meeting held on 29 May 1990, which had been published (*Bull. Brit. Orn. Cl.* 110: 113–114), were approved and were signed by the Chairman.

The Report of the Committee for 1990 was presented. It was proposed by the Honorary Secretary, seconded by the Honorary Treasurer, that the Report be amended as follows: page 2, lines 11 and 12, the first sentence to be amended to read: '**Bulletin sales.** Non-member subscribers to the *Bulletin* in 1990 were 156 (23 U.K., 133 Overseas)'. The Chairman said that the number of non-member subscribers showed a welcome increase in 1990. The amendment was carried unanimously and on the proposal of Dr Monk, seconded by Mr J. G. Parker, the amended Report was adopted unanimously.

The Editor reported that there had been a smooth hand-over of the editorship from Dr Monk. A satisfactory number of manuscripts were coming in and he hoped that it might be possible in the future to increase the number of pages. He did not propose to make any radical changes in the *Bulletin*. He said he had received several complimentary messages about the *Bulletin*.

The Chairman congratulated Dr Monk for the excellent way he had edited the *Bulletin* for the past 15 years, which was itself a record number of years for the office to be held by one Editor. He went on to say how fortunate it was for the Club to have such an eminent new Editor in Dr David Snow.

The Secretary said that in addition to the nominations proposed by the Committee she had received a letter of resignation as Committee Member from Dr A. Tye (who had taken up a post overseas) and he had proposed Dr R. A. Cheke as Committee Member for the vacancy thus created. The nomination had been seconded by J. H. Elgood and had been properly received in accordance with Rule 5. No other nominations had been received.

The following were then declared duly elected, or re-elected as stated:—

Hon. Secretary:	Mrs A. M. Moore (re-elected)
Hon. Treasurer:	S. J. Farnsworth (re-elected)
Committee:	Dr J. F. Monk and Dr R. A. Cheke (elected *vice* Mr R. H. Kettle who retired by rotation and was ineligible for re-election, and Dr A. Tye who had resigned).

No other business had been notified in accordance with Rule 12.

On the proposal of Mr N. H. F. Stone, seconded by Mr I. Collins, it was unanimously agreed to adjourn the Meeting until 5.45 p.m. on Tuesday, 9 July 1991 at the same place for the presentation and acceptance of the Accounts for 1990. The meeting was declared closed for the day.

The Annual General Meeting, adjourned from 21 May 1991, was resumed at 5.45 p.m. on Tuesday, 9 July 1991 at the same place. Nine members were present. The Accounts for 1990 were presented. The Chairman said that thanks were due to the anonymous donor who paid the cost of the Conversazione held by the Club at the University of Canterbury, Christchurch, New Zealand on Wednesday, 5 December 1990, during the XX Congressus Internationalis Ornithologicus. It was unanimously agreed that the Accounts for 1990 should be received and adopted.

The Meeting closed at 6.05 p.m.

Following the Annual General Meeting the eight hundred and tenth meeting of the Club was also held at Imperial College, in the Senior Common Room, Sherfield Building, on Tuesday, 21 May 1991 at 6.15 p.m. 27 Members and 14 guests attended.

Members attending were: R. E. F. Peal (*Chairman*), Colonel J. Vincent (*Life Member*), Dr D. H. Thomas (*Speaker*), M. A. Adcock, Miss H. Baker, Major N. A. G. H. Beal, P. J. Belman, D. R. Calder, Cdr M. B. Casement, RN Retd, Dr R. A. Cheke, I. D. Collins, S. J. Farnsworth, D. Griffin, C. Helm, R. H. Kettle, Rev. G. K. McCulloch, Dr J. F. Monk, Mrs A. M. Moore, R. G. Morgan, Mrs M. Muller, J. G. Parker, Dr R. Self, P. J. Sellar, Dr D. W. Snow, S. A. H. Statham, N. H. F. Stone, A. R. Tanner.

Guests attending were: Mrs B. Adcock, Cdr M. K. Barrit RN, D. Brooks, Mrs W. Brooks, Mrs F. Farnsworth, R. Gillmor, Mrs S. Griffin, Ms K. Hoff, Mrs N. Liddell, Mrs I. McCulloch, Mrs D. Monk, P. J. Moore, Mrs E. Peal, R. Ranft.

The meeting was particularly glad to welcome one of the Club's Life Members who was making a visit to Britain, Colonel Jack Vincent M.B.E., who has been a member of the Club since 1934.

After supper the Chairman made a presentation of a painting of Sacred Ibis *Threskiornis aethiopica* by Robert Gillmor to Dr James Monk, who had recently retired from the honorary office of Editor of the *Bulletin*. He paid tribute to Dr Monk's record number of years in office during which time the *Bulletin* had maintained its very high standard. This, he said, had been demonstrated at the exhibition during the recent I.O.C. in New Zealand, where the *Bulletin* was especially commended to the congress by the ICZN.

The Chairman made his Annual Address to the Club. He spoke on the life of the Club's benefactor, Herbert Stevens. The address will be printed in the December issue.

Dr D. H. Thomas then spoke on the problems of salt excretion by sea-birds under pelagic conditions. His address, on an important topic of which most of his audience were quite ignorant, was heard with great interest.

The eight hundred and eleventh meeting of the Club was held at the same place on Tuesday, 9 July 1991 at 6.15 p.m. 30 Members and 18 guests attended.

Members attending were: D. GRIFFIN (*Chairman of the Meeting*), R. E. SCOTT (*Speaker*), Miss H. BAKER, B. H. BECK, K. P. BETTON, Mrs D. M. BRADLEY, Cdr M. B. CASEMENT, RN Retd, Dr R. A. CHEKE, B. COLEMAN, S. J. FARNSWORTH, G. D. FIELD, Rev. T. W. GLADWIN, Dr J. J. D. GREENWOOD, A. GIBBS, Ms R. M. JONES, R. H. KETTLE, Rev. G. K. McCULLOCH, Dr J. A. MELDRUM, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, P. J. OLIVER, J. G. PARKER, A. J. RANDALL, Dr R. SELF, P. J. SELLAR, R. E. SHARLAND, N. H. F. STONE, C. E. WHEELER.

Guests attending were: Mrs G. BONHAM, M. BONHAM, Miss A. CLERI, Mrs F. FARNSWORTH, Dr R. FULLER, Mrs B. GIBBS, Mrs J. M. GLADWIN, Miss K. GREENWOOD, Mrs S. GRIFFIN, Miss K. HOFF, Mrs I. McCULLOCH, P. J. MOORE, C. A. MULLER, Mrs M. OLIVER, T. W. PARMENTER, N. PEACE, R. RANFT, Mrs A. SCOTT.

Mr Robert Scott gave the address on birds in Bulgaria. He described the country and the reserves which have been created there, and illustrated his description with slides. His account of one of the less well known countries of Europe was most interesting and was well received.

British Ornithologists' Club
Income and Expenditure Accounts for the year ended 31 December 1990

	1990		1989	
	£	£	£	£
INCOME				
Subscriptions received				
Members Subscriptions	3,566		3,342	
Subscribers	2,530		2,129	
Less Subscription recruitment expenses	(282)		—	
		5,814		5,471
Donations received		46		281
Investments income				
Stevens Bequest Fund	89		164	
Deposit interest	553		865	
Barrington Trust Fund	—		48	
Charity Account Interest	5,012		3,515	
		5,654		4,592
Rent received				
Property Clovelly, Tring	2,340		2,730	
Less costs	(263)		(168)	
Legal fees arising in 1989 and 1990 re planning permission	(2,143)		—	
		(66)		2,562
Income Tax recovered				
Deeds of Covenant	234		204	
Other	55		52	
		289		256
Bulletin back numbers				
Sales	933			
Less reprinting costs	52			
		881		262
Cost of Sales				
Opening stock	1			
Closing stock	(100)			
		99		—
Meetings—Income	3,653		2,730	
—Expenditure	(4,038)		(2,760)	
		(385)		(30)
		12,332		13,394
EXPENDITURE				
Printing and Publication of *Bulletin*	8,297		7,103	
Separates	266		396	
	8,563		7,499	
Less—Sales of separates	(268)		(348)	
—Page charges	(9)		(112)	
	8,286		7,039	
Editorial and secretarial	231		—	
Printing labels	865		—	
Postage of *Bulletin*	1,145		1,041	
Publication and Distribution costs of current issue of *Bulletin*	10,527		8,080	
Cost of projection equipment restated	(100)		—	
Projector	—		352	
Printing, postage and stationery	1,316		757	
Telephone	168		167	
Insurance	56		48	
Notices of meetings	—		101	
Accountancy	862		460	
Miscellaneous expenses	215		83	
Bank charges	8		1	
		(13,052)		(10,049)
Excess of Income over Expenditure/(Excess of Expenditure over Income)		(720)		3,345

British Ornithologists' Club
Balance Sheet as at 31 December 1990

	1990		1989	
	£	£	£	£
General Fund				
Balance at 1 January 1990	32,923		29,578	
Add: Excess of income over expenditure	(720)		3,345	
Balance at 31 December 1990		32,203		32,923
Trust Fund—F. J. Barrington				
Balance at 1 January 1990	577		445	
Add: Profit on sale of 5½% Treasury Stock	—		132	
Balance at 31 December 1990		577		577
Stevens Bequest Fund				
Balance at 1 January 1990	60,568		60,606	
Less: Loss on sale of 10¼% Exchequer Stock	—		(38)	
Add: Increase for property valuation	32,000		—	
Balance at 31 December 1990		92,568		60,568
		125,348		94,068
Barrington Trust Fund investment				
Charity Fund 111.57 COIF Income shares		577		577
Freehold property		90,000		58,000
		90,577		58,577
Current assets				
Stock of *Bulletin*	100		1	
Cash in Hand	41		—	
Cash at Bank—Barclays Prime	3,810		—	
—Lloyds Current	59		275	
—Lloyds High Interest	3,914		6,115	
—Post Office Giro	114		1,292	
—Charities Deposit	33,484		31,491	
Sundry Debtors	15		2,177	
Projection Equipment	100		—	
	41,637		41,351	
Current liabilities				
Subscriptions received in advance				
—Members	1,572		849	
—Subscribers	899		1,429	
Sundry Creditors	4,395		3,582	
	6,866		5,860	
		34,771		35,491
		125,348		94,068

NOTES TO THE ACCOUNTS

1. The rent of Clovelly has been fixed by the Rent Officer at £2,340 p.a. until 1992.
2. At 31 December 1990, the Freehold property was revalued at £90,000 by I. E. Howard FRICS, and accepted by the officers who consider market value to be materially equal to the book value shown above. This revalued amount relates to the freehold interest in the entire property free of any encumbrance, the existing tenancy to be terminated by agreement between the two parties and without making any allowance for possible development value. If the freehold property shown at valuation had been shown at cost the amount at 31 December 1990 would have been £58,000.
3. Stock revalued to represent more realistic net realisable value based on the year's sales.
4. Most of the projection equipment cost has been written off in the income and expenditure account against 1989 and 1990 profits and therefore shown in the balance sheet at a net book value of £100.

Report of the Accountants to the members of British Ornithologists' Club

We confirm that, in accordance with your instructions, we have audited the financial statements of the club in accordance with approved auditing standards. We further confirm that the financial statements have been prepared in accordance with the statement of recommended practice on charities.

BINGHAM, CONYERS & CO., Chartered Accountants
10 Horn Lane, Acton, London W3 6QT
14 July 1991

Approved by the Committee on 9 July 1991
R. E. F. PEAL, Chairman

Natal pterylosis of *Premnoplex brunnescens*, *Thripadectes virgaticeps* and *Synallaxis candei* (Furnariidae)

by Charles T. Collins, Manuel Marin A. & Miguel Lentino R.

Although the natal pterylosis of some Neotropical passerine birds has been given increased attention, the information available on the suboscine birds is limited to several tyrant flycatchers (Tyrannidae) (Collins & McDaniel 1989) and *Manacus manacus* (Pipridae) (Collins 1982). Quantified information is currently lacking for the large and diverse family of ovenbirds (Furnariidae). This paper, part of a continuing analysis of the natal pterylosis of Neotropical passerines (Collins 1973, 1982, Collins & Bender 1977, Collins & McDaniel 1989) presents data on 3 furnariids:—the Spotted Barbtail *Premnoplex (Margarornis) brunnescens,* Streak-capped Treerunner *Thripadectes virgaticeps*, and White-whiskered Spinetail *Synallaxis (Poecilurus) candei.*

A single specimen (Stage A—see Wetherbee 1957: 356) of *Thripadectes virgaticeps* was collected (M.M.) at Las Palmeras, near Chiriboga, Pichincha Prov., Ecuador on 13 June 1989. Las Palmeras is about 35 km west of Quito at an elevation of 1900 m. A single specimen (late Stage A) of *Premnoplex brunnescens* was collected (M.M.) at the same locality on 21 June 1989. A single specimen (early Stage A) of *Synallaxis candei* was collected by M. Lentino and C. Bosque at Medanos de Coro, 3 km north of Coro City, Venezuela, at an elevation of 20 m on 17 December 1984. All specimens were examined under a binocular dissecting microscope and the number and distribution of natal downs (neossoptiles) recorded (Table 1). The terminology for neossoptile tracts and regions within tracts follows Wetherbee (1957). All 3 species had only a moderate to light covering of neossoptiles: 121 downs in 10 tracts in *Premnoplex*, 123 downs in 13 tracts in *Thripadectes*, and 131 downs in 10 tracts in *Synallaxis*. Neossoptile colour was dark grey in *Premnoplex* and dark tipped but paler grey basally in *Thripadectes*. In the first 2 above mentioned species, flight feather and upper rectrix covert neossoptiles were only about 1 mm long and the single crural tract down only 3 mm; in *Synallaxis*, rectrix downs were similarly about 1 mm long while those of the secondaries and abdominal tract were 7 and 3 mm respectively. The neossoptiles on all other tracts were substantially longer and longest on the spinal region of the dorsal tract where they reached a length of 15 mm.

The total number of neossoptiles reported here for these 3 furnariids is substantially lower than that reported for an array of open-cup nesting species of tyrannids (Collins & McDaniel 1989, Collins unpubl.). This reduced number of neossoptiles has been similarly noted for a number of species which build enclosed or cavity nests (Collins 1973, Collins & McDaniel 1989). The nest of *Premnoplex* is a mossy ball wedged in crevices under low logs above streams or on banks or rock faces, while *Thripadectes* nests at the end of a burrow in a forested bank. The nest of

TABLE 1
Distribution of neossoptiles in 3 ovenbirds

Tract or region	*Premnoplex brunnescens*	*Thripadectes virgaticeps*	*Synallaxis candei*
Coronal	7/7*	6/9	10/9
Ocular	2/2	4/4	3/2
Occipital	4/3	3/3	4/6
Spinal	5/8	7/8	7/13
Pelvic**	0	7	8
Scapular	12/8	10/9	9/9
Femoral	3/5	5/4	11/9
Abdominal	0/0	0/0	5/6
Crural	0/0	1/0	0/0
Rectrices	5/5	5/5	5/5
Upper Rectrix Covert	0/0	1/1	0/0
Primaries	10/10	10/10	0/0
Secondaries	4/3	1/0	5/5
Greater Secondary Coverts	9/9	3/7	0/0
Total	121	123	131

*Number of neossoptiles on right/left side.
**Unpaired tract on midline; all others paired.

Synallaxis is a bulky structure composed chiefly of dry spinescent or thorny twigs and sticks (Bosque & Lentino 1987). The absence of quantified information on the abundance of neossoptiles in other species of ovenbirds does not at this time permit trying to reveal a relationship between natal pterylosis and nest type as has recently been done for the Tyrannidae (Collins & McDaniel 1989).

The distribution of neossoptiles in the ocular tract is unusual in that they are confined to the extreme posterior end and give the appearance of belonging to a possibly unique short row of 2–4 downs almost perpendicular to the posterior end of the coronal row. However, comparison with the more extensive capital tract downs found in *Sayornis* flycatchers (Collins & Keane, in prep.) confirms that it is more appropriate to consider them orbital downs. It will be of interest to see if this pattern occurs in other species in this diverse family. However, as previously noted (Collins 1990), the possibility of making more detailed interspecific or intraspecific comparisons and correlations with aspects of nesting ecology is greatly hampered by the scarcity of specimens for study.

Acknowledgements

Carlos Bosque, Juan Manuel Carrion, P. Beals, R. Corado, M. Holmgren and K. Molina provided valuable help in the field. Dr Sergio Figueroa of the Ministerio of Agricultura y Ganaderia kindly assisted in obtaining permits to conduct research and collect in Ecuador, and Ing. Miguel Moreno, Director of the Museo Ecuatoriano de Ciencias Naturales, provided valuable cooperation. M. Marin's field work in Ecuador was supported by the Western Foundation of Vertebrate Zoology.

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Records of new and unusual birds from northern Bolivia

by Theodore A. Parker, III, Abel Castillo U., Murray Gell-Mann & Omar Rocha O.

Received 11 October 1990

Recent fieldwork by the authors in northern and central Bolivia has yielded numerous noteworthy distributional records of birds, including 14 species not previously reported from the country (*Sterna paradisaea, Nannopsittaca* sp. nov., *Lurocalis semitorquatus, Eubucco tucinkae, Automolus dorsalis, Xenops milleri, Frederickena unduligera, Conopophaga peruviana, Oxyruncus cristatus, Mionectes olivaceus, Phylloscartes* sp. nov., *Cyphorhinus thoracicus, Conothraupis speculigera* and *Psarocolius oseryi*), and numerous species until now known in the country from only one or a few localities.

Much of the information included in this paper results from avifaunal surveys undertaken to determine the biological importance of little-known regions not previously visited by biologists. This work was jointly carried out by personnel of the Museo de Historia Natural (La Paz), Instituto de Ecología (La Paz), and the Rapid Assessment Program of Conservation International (Washington, DC). Critical logistical support was provided by Hermes Justiniano, Director of Fundación Amigos de la Naturaleza (Santa Cruz). Also included are some observations made by Parker and colleagues during visits to the Río Heath, along the Bolivia–Peru border, in August 1988, and to the Serranía de Huanchaca of eastern Santa Cruz in August 1989; that work was supported by the Louisiana State Museum of Natural Science (LSUMNS). Specimens were deposited in the Museo de Historia Natural La Paz (MHNLP), and sound recordings are housed in the Library of Natural Sounds, Cornell University, Ithaca, New York (LNS). Plant identifications were provided by

Robin Foster (Field Museum of Natural History), Alwyn Gentry (Missouri Botanical Garden), and Stefan Beck (Herbario Nacional, La Paz).

The majority of records included herein were obtained at seven localities.

(1) Dpto. La Paz: lower Río Heath, from Puerto Pardo upriver c. 50 km. Parker (and P. Marra, D. Ricalde, K. Rosenberg, C. Walton and W. Wust) surveyed birds of riverine and high-ground forests 10–19 August 1988.

(2) Dpto. La Paz: Alto Madidi (13°40'S,69°00'W), a logging camp on the south bank of the Río Madidi opposite the mouth of the Río Enatagua, c. 100 km NW of Ixiamas. A variety of tall evergreen forest types along a transect c. 5 km × 200 m was surveyed by Parker and Castillo 15 May–1 June 1990; 403 species of birds were found, including 60 species not previously reported from the department.

(3) Dpto. La Paz: Ixiamas (13°40'S,68°10'W), a small town at the western edge of an extensive savannah bordered by more extensive forests, 100 km NW of Rurrenebaque. Parker and Castillo surveyed grasslands 0.5 km north and 0.5–7.0 km E of the town 1–3 June 1990.

(4) Dpto. La Paz: Calabatea (14°45'S,68°33'W), a road construction camp c. 35 km SW of Apolo along a new road to La Paz. From 7 to 12 June 1990 Parker surveyed birds in pristine lower montane forests at 1300 to 1600 m. (Note: this is not the Calabatea of Carriker (Bond & Meyer de Schauensee 1942.)

(5) Dpto. Beni: Estación Biológica del Beni (14°38'S,66°18'W), 50 km E of San Borja. Includes records obtained by Rocha during extensive fieldwork in 1988–1989, and by Parker and Gell-Mann 17–18 June 1989.

(6) Dpto. Beni: Serranía Pilón (14°50'S,67°20'W), c. 40 km W of San Borja. From 13 to 16 June 1990, Parker, Gell-Mann and Spencer Beebe surveyed lower montane forests on both slopes of Serranía Pilón, 600–1000 m.

(7) Dpto. Beni: Versalles (13°00'S,62°50'W), a small village (pop. 130) on the Bolivian side of the Río Iténez/Guaporé. Riverine and high-ground forests were inventoried 16–17 June 1990 by Parker, Rocha and Hermes Justiniano.

Species accounts

VARIEGATED TINAMOU *Crypturellus variegatus*

One calling (LNS) at dusk on 28 May 1990 in upland forest at Alto Madidi represents the second record for Bolivia, and the southernmost anywhere for the species. The exceptional diversity of tinamous (9 forest species) at this locality underscores the biological importance of the region.

BRAZILIAN TINAMOU *Crypturellus strigilosus*

Although there are few published records of this species in Bolivia (Remsen & Traylor 1989), it is apparently widespread and locally common in the eastern third of the country. In August 1990 Parker and Rocha heard (LNS) several each day in stunted, vine-rich forests along the upper Río Negro at Perseverancia, Dpto. Santa Cruz, and also heard one on 20 August in similar forest west of Versalles, Dpto. Beni (the first departmental record). The species was recently found to be common in forests along the western edge of the Serranía de Huanchaca, Dpto. Santa Cruz (Bates *et al.*, in press).

LESSER YELLOW-HEADED VULTURE *Cathartes burrovianus*

This species is common and widespread in the savannahs of northern and central Bolivia. Up to 30 were noted each day in open grasslands at Ixiamas, Dpto. La Paz, and even larger numbers were seen daily in the San Borja, Dpto. Beni, area in June 1989 (e.g., 28 were counted on consecutive fenceposts in seasonally inundated grassland 27 km E of San Borja, and 46 were seen in the air at once a few km farther west). On 25 June 1990 we counted a minimum of 200 individuals within 30 km of San Borja. Many were gathered on the ground or fenceposts near small, rapidly shrinking ponds filled with fish (*Hoplias* sp.). We have observed equally large numbers from a small plane during overflights of pristine savannahs along the Río Negro in southern Dpto. Beni, and over similar areas along the Río Grande in the northwesternmost portion of Dpto. Santa Cruz. In all of these regions, *C. burrovianus* outnumbers *C. aura* in grassland.

Surprisingly, the first Bolivian records of *C. burrovianus* were reported only within the last 10 years (Remsen & Ridgely 1980, Schmitt & Schmitt 1987).

TINY HAWK *Accipiter superciliosus*

One perched tamely in canopy at the edge of tall foothill forest at 650 m on the lower east slope of Serranía Pilón apparently represents the first record for Dpto. Beni, and one of only a few for the country (Remsen & Traylor 1989). The small size, whitish, lightly barred underparts, yellowish cere and orbital flesh, and yellowish legs distinguish this little-known species from similar raptors.

SOLITARY EAGLE *Harpyhaliaetus solitarius*

Two adults circling low over mossy, ridgetop forest at c. 1050 m on Serranía Pilón represent a first record for Dpto. Beni, and one of the few for the entire country (Remsen & Traylor 1989).

BLACKISH RAIL *Rallus nigricans*

In late May 1990, Parker heard the unmistakable calls of a pair of this species several times at Alto Madidi, where at least one pair inhabited a 1 ha marshy area of tall grasses (*Paspalum* sp.) in several cm of water. This is only the second record of *R. nigricans* for Bolivia, the first being a sighting from Dpto. Pando (Parker & Remsen 1987). Vocalizations heard at Alto Madidi included a series of strident *wheee* notes, probably given by the male, and a low, almost inaudible *bubububu* series given simultaneously by the other (female?) individual.

GREY-BREASTED CRAKE *Laterallus exilis*

Although reported for the first time in Bolivia only recently (Schulenberg & Remsen 1982), this inconspicuous species is apparently common and widespread in lowland northern and central Bolivia. At least 3 pairs were calling (LNS) in thick grasses at the edge of a flooded depression bordered by an expansive grassland c. 27 km E of San Borja, Dpto. Beni, on 24 June 1989, and 2 pairs called from tall grass along the airstrip at Rurrenebaque, Dpto. Beni, on 21 May 1990. The species was common (LNS) at Alto Madidi and Ixiamas, in dry and flooded areas of tall grasses (*Paspalum* spp.) along the edge of the airstrips, and in small marshy places; at least 12 pairs were located at Alto Madidi, and 2–3 pairs were heard at Ixiamas. Rufous-sided Crakes *Laterallus melanophaius* were heard in the same small marshes at Alto Madidi.

On 17 August 1990, Parker and Rocha heard the distintive calls (*tink-tink-tink*) of at least 2 *L. exilis* in floating mats of *Paspalum* along the Río Negro at Perseverancia, Dpto. Santa Cruz; these are the first records for the department and southernmost for the country.

RUSSET-CROWNED CRAKE *Laterallus viridis*

A male and a female (AMNH 791736, 791737) collected by J. Cuello along the Río Mamoré at Guayaramerin, Dpto. Beni, on 2 May 1965 represent the first documented Bolivian record (A. Capparella, *in litt.*). Remsen & Traylor (1989) considered Niethammer's (1953) sight record from Dpto. La Paz to be hypothetical.

OCELLATED CRAKE *Micropygia schomburgkii*

This little-known rail is apparently numerous and widespread in a variety of grassland habitats in Bolivia, although until now it was known in the country from only one specimen collected at San Joaquin, Dpto. Beni (Blake 1977). We here report additional records from Dptos. Beni, La Paz, and Santa Cruz.

This species was fairly common in June 1989 in open *Trachypogon* grassland almost devoid of bushes, in three areas c. 15–30 km E of San Borja, Dpto. Beni. At least 8 sang (LNS) sporadically from dawn until 08.30, in an area of c. 400 × 200 m dense grassland averaging 1 m in height, c. 25 km E of San Borja. The ground was muddy, indicating that the habitat may be flooded during wetter months. Six individuals were heard (LNS) in c. 500 m^2 of drier, upland grassland dotted with small shrubs (Melastomataceae, Asteraceae) c. 28 km E of San Borja, and 4 were heard at dusk in similar habitat c. 5 km N of San Borja along the road to Reyes. From 1 to 3 June 1990, several *M. schomburgkii* were heard (LNS) each morning in seasonally flooded grasslands with scattered trees at Ixiamas. In August–September 1990, the species was fairly common in dense, dry campo grasslands (*campo sujo* and *campo limpo*; see Eiten 1978 for habitat descriptions) at 650–750 m on the Serranía de Huanchaca plateau; as many as 4 territorial pairs were counter-calling at once at dawn and dusk within c. 500 m^2 of open grassland (LNS); the seemingly small territories of these birds (less than 0.5 ha?) appeared to be centred on clumps of shrubby vegetation and tall grasses around termite mounds. Calling birds could not be lured more than a few metres from such cover. The species disappeared from this area after a fire (on 1 October) destroyed much of the vegetation (J. Bates, pers. comm.). On 21 August 1990, Parker heard *M. schomburgkii* in similar *campo limpo* habitat on Cerro San Simón, in eastern Dpto. Beni (Parker & Rocha, in press).

In summary, *Micropygia schomburgkii* is apparently widespread and numerous in the grasslands of northern and central Bolivia. It occurs in both well-drained and seasonally flooded areas, and nearly pure, open grasslands (*campo limpo*) as well as those with an abundance of shrubs and small trees (*campo sujo*).

ARCTIC TERN *Sterna paradisaea*

On 22 May 1990, Parker and Hermes Justiniano found an adult-plumaged Arctic Tern at Laguna Santa Rosa, along the lower Río Tuiche, Dpto. La Paz. The bird was observed for more than 30 minutes as it flew back and forth 6–12 m above the water, and poor but identifiable photographs (LSUMZ) were taken by Justiniano. This extraordinary record is the first for Bolivia, and may be the first for the interior of South America.

BLUE-HEADED MACAW *Ara couloni*

The first Bolivian records were reported by Parker & Remsen (1987). On 21 June 1989 one pair was seen at a distance and several others were heard 2–8 km N of Rurrenabaque, just north of the Río Beni, in Dpto. La Paz. These records indicate that *A. couloni* ranges as far south in the Bolivian foothills as 14°30′S, and it probably occurs, at least occasionally, in Dpto. Beni. Its occurrence in lowland southeastern Peru is erratic (pers. obs.), so we were not surprised when we did not record the species during two weeks of fieldwork at Alto Madidi.

CRIMSON-BELLIED PARAKEET *Pyrrhura rhodogaster*

Five feeding on *Cecropia* catkins in high-ground forest c. 2 km W of Versalles on 20 August 1990, and a previously unpublished male (AMNH 791770) collected there on 21 July 1964 by J. Cuello (A. Capparella, *in litt.*), represent the first records for Dpto. Beni. First reported from forests bordering the Serranía de Huanchaca, Dpto. Santa Cruz (Bates *et al.* 1989), Parker and Rocha also saw several flocks (5–12 individuals) of *P. rhodogaster* in *Ficus*-dominated forests at Perseverancia, along the Río Negro, Dpto. Santa Cruz, c. 150 km W of Huanchaca. The species probably occurs widely in eastern Bolivia east of the Río Mamoré.

Nannopsittaca sp. nov.

This small, inconspicuous parrot was recently discovered in Peru (O'Neill *et al.* 1991); it will probably be found to occur throughout much of southwestern Amazonia. The first Bolivian records are as follows: 3+ in river-edge trees (including small *Calocophyllum spruceanum* and *Cecropia membranacea*) along the lower Río Heath, Dpto. La Paz, on 16 August 1988, and two flocks (4,5+ individuals) in river-edge forest at Alto Madidi by Parker and Castillo on 24 and 28 May 1990 (tape-recordings/LNS). Parker has observed small groups feeding on a variety of small fruits and seeds, including those of an arboreal, epiphytic cactus (*Rhipsalis* sp.?; Cactaceae), *Cecropia* catkins (Moraceae), and seeds of a *Vernonia* sp. (Compositae).

SCARLET-SHOULDERED PARROTLET *Touit huetii*

A vocal flock of 8 in rapid flight high over forest along the lower Río Heath on 11 August 1988, c. 15 km upriver from Puerto Pardo, Dpto. La Paz, represents the second Bolivian record (LNS). This species is almost surely nomadic in upper Amazonia, for it is rarely found in one area for more than a few weeks at a time (Parker, pers. obs.).

ORANGE-CHEEKED PARROT *Pionopsitta barrabandi*

As in other upper Amazonian forests, this species was fairly common at Alto Madidi and along the lower Río Heath, but was rarely seen except in rapid flight low over the canopy of *terra firme* forest away from the rivers. It was unusually numerous at Alto Madidi, where up to 16 were heard each morning along c. 5 km of a logging road; the birds passed over singly, in pairs, and regularly in groups of 6 individuals; we once saw at least 12 flying together in a compact flock, this being the largest number we have ever seen at one time, except for the large numbers (up to 40 or more) that regularly gather with other parrots at mineral licks on steep riverbanks in upper Amazonia (pers. obs.; C. Munn, pers. comm.).

While foraging these parrots were silent and almost invisible; they slowly crept along branches and pulled off fruits without rustling the foliage. Three together fed on *Ficus sphenophylla* figs, and another pair was noted in the crown of a fig with larger fruits. The high density of *P. barrabandi* at Alto Madidi may relate to the relative scarcity of *Pionus menstruus* and *Amazona* spp. in the area. In August 1988 Parker observed small numbers of *P. barrabandi* each day, always in flight, over the lower Río Heath, and Parker and Rocha heard (LNS) one over forest at Versalles, Dpto. Beni, the southernmost record ever for the species. The only previous Bolivian records were reported by Remsen & Ridgely (1980) and Parker & Remsen (1987).

SEMICOLLARED NIGHTHAWK *Lurocalis semitorquatus*

A specimen of *L. s. nattereri* collected by Rocha at the Estación Biológica del Beni on 24 October 1988 is the first documented record of this species for Bolivia. Sight records of *L. semitorquatus* from Mucden, Dpto. Pando, in June 1986 (Parker, unpubl.), several seen at dusk over stunted forest near Aserradero Moira, west of the Serranía de Huanchaca, Dpto. Santa Cruz, in August 1989 (Bates & Parker, unpubl.), and tape-recordings (LNS) of one flying over high-ground forest 1 km W of Versalles, Dpto. Beni, at first light on 21 August 1990 were almost surely of this form. Previous published records of *Lurocalis* from Bolivia pertain to the highland species *rufiventris*, whose morphological and vocal differences warrant separation of *rufiventris* from *semitorquatus*. All forms of the latter are vocally similar (P. Schwartz, pers. comm.; pers. obs.; Hardy & Reynard 1988).

BAND-TAILED NIGHTHAWK *Nyctiprogne leucopyga*

Bates *et al.* (1989) reported the first Bolivian records from the Río Paragua at Piso Firme, Dpto. Santa Cruz. Eight individuals (AMNH 791795-791802) collected by J. Cuello along the Río Iténez, "frente de Costa Marques", "arriba de Costa Marques", and at the "boca del Río Baures", Dpto. Beni, from 31 August to 3 October 1964 (A. Capparella, *in litt.*), are the first Bolivian specimens. The species is apparently abundant along the Río Iténez/Guaporé, for Parker and Rocha observed more than 60 flying low over shrubby vegetation on the high west bank of the Río Iténez at Versalles, Dpto. Beni, at dusk on 20 August 1990; these were accompanied by one *Chordeiles rupestris* and at least one male *Hydropsalis climacocerca*, the latter not previously reported from Dpto. Beni.

Nyctiprogne will no doubt be found along the entire length of the Río Iténez/Guaporé, as well as other blackwater rivers in Beni and Santa Cruz.

GREY-RUMPED SWIFT *Chaetura cinereiventris*

On 20 June we watched small groups of 3–4 displaying pairs (LNS) of *C. cinereiventris* circling low over tall, lower montane forest at 800 m on the east slope of Serranía Pilón, Dpto. Beni. At least two large flocks of (up to 60) *cinereiventris* accompanied by smaller numbers of *C. egregia* were observed flying low over the lower Río Heath, Dpto. La Paz, on 11 August 1988, following the passage of a cold front. The species was also fairly common (up to 12 noted daily) over foothill forest at Alto Madidi in late May 1990. On 20 September 1989 two specimens (LSUMNS) were collected by T. J. Davis over humid evergreen forest 30 km E of Aserradero Moira, at the west base of Serranía Huanchaca, Dpto. Santa Cruz. These are the first records of *Chaetura cinereiventris* for the departments of La Paz, Beni and Santa Cruz. The first Bolivian records were from Dpto. Pando (Parker & Remsen 1987).

LESSER SWALLOW-TAILED SWIFT *Panyptila cayennensis*

Two flying low over gallery forest c. 60 km E of San Borja on 23 June 1989, and two flying high (LNS) over foothill forest at Alto Madidi on 20 June 1990 represent the second and third Bolivian records (see Parker & Remsen 1987) and first departmental records for Beni and La Paz. The species is undoubtedly widespread but uncommon over much of northern Bolivia. Its solitary habits (rarely are more than 2 seen at once) and tendency to forage very high make the species difficult to detect.

SCARLET-HOODED BARBET *Eubucco tucinkae*

This little-known species, until now thought to be endemic to Peru, was found in floodplain forest within 150 m of the river at Alto Madidi in late May 1990. At least two pairs were located in tall (35 m) forest dominated by a relatively small number of tree species, the most conspicuous of which were *Terminalia oblonga, Sapium marmieri, S. ixiamasense, Acacia loretensis, Cedrela odorata, Erythrina* sp. and *Nectandra reticulata,* with smaller under-story trees including a *Sorocea* sp. and *Triplaris poeppigiana* (R. Foster, pers. comm.). The middle-story was open, but there was a dense ground cover of *Heliconia metallica* and scattered thickets of spiny bamboo (*Guadua* sp.). The barbets were repeatedly observed in dense vine tangles high in the crowns of *Terminalia* and other tall trees, where they searched curled, dead leaves trapped in the tangles, in the manner of other Neotropical barbets (Remsen & Parker 1984). Calling males responded aggressively to tape playbacks of their songs, low-pitched, resonant series (*boo-boo-boo-boo-boo*) lasting about 4 seconds, given at intervals of 10–15 seconds (Bolivian recordings in LNS); the *boo* notes almost run together, occasionally producing a quavering effect. While vocalizing, birds often perched conspicuously on an open branch, with the bill held down almost touching the breast feathers. These barbets occasionally associated with mixed-species flocks containing such river-edge forest species as *Campylorhynchus turdinus, Cissopis leveriana* and *Ramphocelus nigrogularis*. Parker has also seen *Eubucco tucinkae* feed on a variety of fruits, including those of several *Ficus* spp. (especially *perforata*), *Cecropia membranacea* (Moraceae), *Psychotria* spp. (Rubiaceae), and *Tabernaemontana* sp. (Apocynaceae).

This is the first report of *Eubucco tucinkae* in Bolivia, although it will probably soon be found in Dpto. Pando, Bolivia, and Estado do Acre, Brazil. It is one of several upper Amazonian species found primarily in tall floodplain forests as well as foothill or lower montane forests at higher elevations (*E. tucinkae* ranges to at least 850 m in SE Peru; pers. obs.); others include *Aulacorhynchus prasinus dimidiatus*, *Cephalopterus ornatus* and *Philydor rufus*.

GOLDEN-COLLARED TOUCANET *Selenidera reinwardtii*

This species was fairly common at Alto Madidi in the canopy of tall forests away from the river; up to 3 pairs, and occasionally 3–4 individuals together, were noted daily. Parker & Remsen (1987) report the first Bolivian records from Dpto. Pando. The species probably occurs in forests west of the Río Mamoré in Dpto. Beni, where it replaces *S. maculirostris*.

SPOT-BILLED TOUCANET *Selenidera maculirostris*

At least 3 males calling (LNS) in the canopy of forest 1–3 km W of Versalles represent the second Bolivian record (see Bates *et al.* 1989), and first for Dpto. Beni. This toucanet probably occurs widely in tall forests between the Ríos Mamoré and Iténez/Guaporé.

ASH-BROWED SPINETAIL *Cranioleuca curtata*

This canopy-dwelling spinetail was until now known in Bolivia from one specimen from Dpto. Cochabamba, and from sight records from Serranía Bellavista, Dpto. La Paz (Remsen & Ridgely 1980). We found it to be a common member of mixed-species flocks in the canopy of tall forest on both slopes of Serranía Pilón, Dpto. Beni, where it occurred from 800 m to the ridgetops (1100 m). Singles or pairs were noted with 3–4 mixed flocks daily along c. 4 km of road; they foraged along moss- and bromeliad-laden limbs and branches, in vine tangles (where they probed trapped dead leaves) and in palm fronds, mainly at 15–25 m. Several were tape-recorded (LNS). The species was also fairly common in mossy forest at 1200–1550 m on ridges above the Río Yuyo, c. 35 km SW of Apolo, Dpto. La Paz. At least 5 pairs were observed daily in that locality.

GREATER THORNBIRD *Phacellodomus ruber*

Surprisingly, this large furnariid was not known from Dpto. La Paz. It was common at Ixiamas near water in tall grassy areas with clumps of bushes and small trees; at least 4 vocal pairs were found in thick vegetation along the airstrip north of the village. It was also numerous on relatively dry, scrub-covered slopes in the Apolo area, especially where tall grass was prevalent c. 25–30 km SW of Apolo at elevations of 1100–1400 m; these areas were apparently covered with some type of forest until recently. In the Apolo region *P. ruber* occurred up to the lower edge of cloudforest, and a few individuals were even noted in *Chusquea* bamboo thickets along humid forest edges. Their large, stick nests almost invariably were built on the branches of isolated trees (mostly in *Didymopanax pittieri*) in open areas. We would not be surprised if the seemingly isolated Apolo population were found to represent an undescribed form, although all individuals found there sounded very like those at Ixiamas (LNS).

POINT-TAILED PALMCREEPER *Berlepschia rikeri*

This highly specialized inhabitant of *Mauritia flexuosa* swamps was first found in Bolivia at Porvenir, Dpto. Pando (Parker & Remsen, 1987). On 22 May 1990 Parker heard 2 pairs counter-singing from *Mauritia* along the north edge of Laguna Santa Rosa, along the lower Río Tuiche, Dpto. La Paz, and on 2 June 1990 he heard another pair in *Mauritia* at the edge of gallery forest in savannah c. 7 km E of Ixiamas. In August 1988 Parker and colleagues also found palmcreepers to be relatively common in *Mauritia*-dotted savannah on the Pampas de Heath, Peru; they are presumably common in similar habitat on the Bolivian (La Paz) side of the river as well. In May 1988 S. L. Hilty (*in litt.*) found two pairs of *Berlepschia* in a small *Mauritia* swamp surrounded by hill forest at Misión Fátima, c. 5 km W of the Río Mainique, Dpto. Beni. This small, isolated stand of *Mauritia* is many kilometres from the nearest suitable habitat to the northeast (pers. obs.).

OLIVE-BACKED FOLIAGE-GLEANER *Automolus infuscatus*

Not surprisingly, this widespread foliage-gleaner was a common inhabitant of older floodplain and upland (*terra firme*) forests at Alto Madidi. It presumably occurs throughout lowland La Paz, Pando (where first reported for the country by Parker & Remsen (1987)), and possibly northern Beni.

CRESTED FOLIAGE-GLEANER *Automolus dorsalis*

Our observations and tape-recordings of *A. dorsalis* in dense bamboo thickets at Alto Madidi (along the north bank of the river opposite camp), are the first for Bolivia. In southwestern Amazonia, and possibly throughout its range, the species is restricted to *Guadua* bamboo thickets inside floodplain or disturbed upland forests (in SE Peru as high as 800 m). It has recently been found in similar habitats in Brazil (Parker *et al.* MS). At Alto Madidi (and in the Tambopata Reserve in adjacent Madre de Dios, Peru) pairs rummaged in dead leaves and other debris trapped in the tangled upper portions of thickets, usually 4–10 m above ground. Contrary to Terborgh (1985), they regularly share river-edge bamboo thickets inside forest with *Automolus rufipileatus*, which tends to forage lower, and also with *Simoxenops ucayalae*, which splits open decaying bamboo stalks in search of arthropods. *A. dorsalis* regularly associates with other bamboo specialists, such as *Cymbilaimus sanctaemariae* and *Cercomacra manu*, the latter of which was also heard at Alto Madidi (the second Bolivian locality; see Parker & Remsen 1987). The voice and behaviour of *Automolus dorsalis* recall those of the bamboo-dwelling *Anabazenops fuscus* of southeastern Brazil. Both species utter staccato, antiphonal duets, in addition to a variety of other vocalizations (LNS).

RUFOUS-TAILED XENOPS *Xenops milleri*

One prolonged sighting (on 18 May 1990) by Parker of an individual foraging along vines and open branches in the canopy (20 m) of tall, high-ground forest at Alto Madidi is the first for Bolivia. In this locality the species was clearly outnumbered by *Xenops rutilans*, of which one or two were found in most large canopy flocks. The scarcity of *milleri* was paralleled by the relative scarcity or absence of other floodplain forest birds at Alto Madidi. *Thamnomanes schistogynus* was similarly scarce, and *Automolus melanopezus, Automolus rubiginosus, Myrmotherula iheringi* and *Ramphotrigon fuscicauda* were not found at all. All of these occur regularly in floodplain forests, especially those with abundant bamboo understory, of the Tambopata Reserve and Manu National Park not far to the north. The restriction of floodplain forests to narrow bands of habitat along the Río Madidi (R. Foster, unpubl.) no doubt explains the absence of such species.

UNDULATED ANTSHRIKE *Frederickena unduligera*

A male observed and tape-recorded (LNS) in dense, *Heliconia*-dominated undergrowth of tall, swampy forest at Alto Madidi represents the first Bolivian record. The bird's song was a rising series of 6–8 short whistles; it differed in pattern and quality from songs of more northerly populations (north of the Ríos Napo and Amazonas in northern Loreto, Peru) which give a more rapid series of upward-inflected notes on one pitch. The relationship of populations of *F. unduligera* separated by the Amazon should be investigated, as more than one biological species may be involved. The previous southernmost record of *F. unduligera* is an unpublished specimen, a male (LSUMZ 84761) collected in June 1977 by G. R. Graves at Quebrada Juliaca on the Peruvian side of the lower Río Heath, Dpto. Madre de Dios, Peru. The species is everywhere uncommon or rare, and very difficult to detect during brief periods of fieldwork. The first record for the Tambopata Reserve, Dpto. Madre de Dios, for example, was obtained in August 1990 following 14 years of almost continuous inventory.

UPLAND ANTSHRIKE *Thamnophilus aroyae*

Remsen *et al.* (1982) summarized what was known of this Bolivian near-endemic. In June 1989 we discovered a population of *T. aroyae* in lower montane forest (at c. 800–1000 m) on Serranía Pilón, Dpto. Beni. Here 10–11 pairs held territories linearly spaced along the road-edge in (*Chusquea*?) bamboo and shrubby vegetation 1–3 m tall. Individuals foraged inside forest up to 30 m from edges; one male was noted as high as 4 m in a dense vine tangle. At Calabatea, Dpto. La Paz, only one pair was found, in forest-edge undergrowth of *Chusquea* bamboo and vine tangles (to 3 m up) on tree trunks. In both areas pairs gleaned insects (including a 1.5 cm green caterpillar and a small green orthopteran) from bamboo foliage by reaching or short-sallying to leaves and stems; they also searched clusters of dead bamboo and other leaves trapped in tangled branches. The species is presumably a colonizer of early successional vegetation in natural landslides, and is apparently now spreading along roads and other man-made clearings throughout the Yungas region of northern Bolivia.

SCLATER'S ANTWREN *Myrmotherula sclateri*

Parker & Remsen (1987) published the first Bolivian (Pando) records of this inconspicuous canopy antwren. The species was unusually common at Alto Madidi in tall, vine-rich forests on high-ground, where pairs were observed in every flock of small insectivores in the canopy; as many as 12 individuals were noted each day. In August 1988 Parker heard (LNS) *M. sclateri* in the canopy of *terra firme* forests on both sides of the lower Río Heath, and in August 1989 collected one (LSUMNS) male of several pairs found in moderately tall forest at the west base of the Serranía de Huanchaca, eastern Santa Cruz. The latter is the southernmost known locality for the species.

LEADEN ANTWREN *Myrmotherula assimilis*

A male (AMNH 792018) collected by J. Cuello along the Río Iténez opposite Costa Marquez, Brazil (Remsen & Traylor 1989), was the first record for Dpto. Beni and a considerable southerly range extension. In August 1990 Parker and Rocha found this antwren even farther south, in a narrow band of seasonally flooded forest on both sides of the Río Iténez/Guaporé at Versalles. Here pairs were noted (and taped, LNS) in association with other small canopy insectivores, including, somewhat surprisingly, *Myrmotherula menetriesii* and *M. axillaris*.

WHITE-FRINGED ANTWREN *Formicivora grisea*

Although found for the first time in Bolivia only recently (Cabot *et al.*, in press), this formicariid is apparently widespread in the eastern third of the country. In September 1989 Bates *et al.* obtained additional specimens from the first Bolivian locality, the Serranía de Huanchaca region of Dpto. Santa Cruz, and in August 1990 Parker and Rocha found it to be fairly common in low thickets along forest edges at Perseverancia, along the upper Río Negro, Dpto. Santa Cruz, and H. Justiniano tape-recorded and photographed a pair in the shrubby edge of forest along the airstrip at Versalles, Dpto. Beni.

CHESTNUT-SHOULDERED ANTWREN *Terenura humeralis*

Pairs or families (of 3–4) of this inconspicuous antwren were noted with nearly all large mixed-species flocks in the canopy of tall *terra firme* forest at Alto Madidi, the second Bolivian locality (see Parker & Remsen 1987) and southernmost ever for the species. A female (MHNLP) was collected.

WHITE-LINED ANTBIRD *Percnostola lophotes*

Two males collected (MHNLP) by Parker in bamboo thickets in river-edge forest at Alto Madidi, where common, are the first for Dpto. La Paz and the second for Bolivia (Parker & Remsen 1987).

GOELDI'S ANTBIRD *Myrmeciza goeldii*

Several pairs tape-recorded (LNS) in *Guadua* bamboo and *Heliconia* undergrowth of tall floodplain forest within 150 m of the river at Alto Madidi were the first for Dpto. La Paz and the second for Bolivia (Parker & Remsen 1987).

SOOTY ANTBIRD *Myrmeciza fortis*

This large formicariid was unusually common in the undergrowth of *terra firme* forests at Alto Madidi, the southernmost known locality for the species, the second for Bolivia (see Parker & Remsen 1987), and first for Dpto. La Paz. A female (MHNLP) was collected by Castillo.

STRIATED ANTTHRUSH *Chamaeza nobilis*

This uncommon antthrush was heard only once (on 19 May 1990) at Alto Madidi, during nearly two weeks of fieldwork in its upland forest habitat. Parker has noticed the tendency for the species to be silent for up to several weeks at a time, in contrast to most other Amazonian formicariids, which vocalize almost daily during clear weather throughout the year. There is only one previous report of this species for Bolivia (Parker & Remsen 1987).

ASH-THROATED GNATEATER *Conopophaga peruviana*

One tape-recorded (LNS) in undergrowth of high-ground forest at Alto Madidi is the first record for Bolivia. The species is usually uncommon, local, and difficult to detect, but it will eventually be found in other lowland forests in Dpto. La Paz, and possibly also in the western part of Dpto. Pando.

SHARPBILL *Oxyruncus cristatus*

This species, not previously reported from Bolivia, was fairly common in stunted montane forest on sandy soil south of the Calabatea camp, c. 33 km SW of Apolo, at c. 1400–1600 m. Two to four were observed daily (5–7 June 1990), always singly with canopy mixed-species flocks of insectivores such as *Philydor rufus, Anabacerthia striaticollis, Leptopogon superciliaris,* and a peculiar mix of tanagers (e.g. *Chlorospingus ophthalmicus, Hemithraupis guira, Tangara punctata, T. gyrola, T. cyanotis*). One sharpbill watched for two minutes hung upside down and probed several clusters of leaves at the ends of branches in the lower canopy (at 8–10 m); it also perch-gleaned small purple fruits. Another individual fluttered along branches and scanned foliage in the manner of a typical flycatcher. We occasionally heard the distinctive call of *O. cristatus,* a long, down-slurred whistle that becomes burry towards the end.

The occurrence of *Oxyruncus cristatus* in the interior yungas of northern Bolivia is not unexpected because the species has been found as far south as the Serranía Pantiacolla, Dpto. Cuzco, Peru (Fitzpatrick *et al.*, MS); its distribution along the eastern slopes of the Andes is patchy, however, and it apparently occurs mainly in stunted forests on rather sandy soils near the crests of outlying ridges, as opposed to taller, more floristically diverse forests on the main ridges. *Oxyruncus* habitat at Calabatea was dominated by a palm (*Dictyocaryum* sp.) that has a similarly local distribution (A. Gentry, pers. comm.).

PLANALTO TYRANNULET *Phyllomyias fasciatus*

Parker and Gell-Mann were surprised to discover a population of this small flycatcher in lower montane forest on the east slope of Serranía Pilón, Dpto. Beni, at c. 850–900 m. The first Bolivian specimen was recently collected in the Serranía de Huanchaca, in extreme eastern Dpto. Santa Cruz (Cabot *et al.*, in press). We watched 3 individuals foraging in crowns of small trees at the edge of mossy forest; their calls or songs (descending series of 3–4 plaintive, short whistles) and bubbling antiphonal duets were tape-recorded (LNS). These vocalizations sounded faster and higher-pitched than those of birds Parker has heard in SE Brazil and NE Argentina. In response to playbacks, all three individuals were lured into the open, lower branches of a small tree, where they nervously turned from side to side, flicked their wings and tails, and vocalized in unison. Another pair was heard in nearby forest canopy. The Pilón population may represent an undescribed form that probably ranges to the north and south on the forested slopes of outlying Andean ridges; it should even be looked for in Peru.

ROUGH-LEGGED TYRANNULET *Phyllomyias burmeisteri*

This frequently overlooked tyrannulet of the canopy was seen or heard in five different areas on the east slope of Serranía Pilón at 800–1000 m. All were solitary individuals perched in the uppermost branches (25–30 m) of tall trees (3 of 5 had sparse, small foliage); they persistently gave high-pitched *feeent* notes at regular intervals of several seconds, and occasionally gave long descending series of 12–16 closely spaced, similar notes. After calling for more than 5 minutes, two of the birds flew 150–200 m to another treetop and resumed calling. Territories are apparently quite large. At Calabatea singles were seen with two large canopy flocks in stunted montane forest on sandy soil, c. 33 km NW of Apolo at c. 1300–1400 m; both were sluggish and rather vireo-like in appearance and behaviour; they peered about for up to 10 sec at a time, and made short, upward sallies to the undersides of small and medium-sized leaves. One bird twice hover-gleaned the tip of a larger leaf.

Surprisingly, *P. burmeisteri* was also found in deciduous montane forest at Chaquimayo, along the Río Machariapo, c. 17 km N of Apolo at 1000 m (tape-recordings by L. Emmons and E. Wolf). The above records suggest that this species is more widespread in Bolivia than previously thought; it was until now known from only 2 specimens from Dptos. Cochabamba and Santa Cruz (Bond & Meyer de Schauensee 1943, Remsen *et al.* 1987).

WHITE-LORED TYRANNULET *Ornithion inerme*

Although there is only one published record of this tyrannid for Bolivia (Parker & Remsen 1987), it is actually fairly common throughout northern Bolivia south to central Dpto. Santa Cruz. We found it at three localities in Dpto. La Paz: (1) Alto Madidi, (2) along the lower Río Heath, (3) c. 25 km S of Tumupassa; four localities in Dpto. Beni: (1) on both slopes of Serranía Pilón up to 875 m, (2) c. 6 km SE of Rurrenabaque, (3) c. 25 km E of San Borja, (4) c. 1–5 km W of Versalles; and in Dpto. Santa Cruz: (1) upper Río Saguayo, Parque Nacional Amboró, (2) Perseverancia, upper Río Negro, (3) Parque Nacional Noel Kempff Mercado (throughout forested portions of park, including those on the Huanchaca meseta at 600–750 m). This is perhaps the most frequently overlooked canopy tyrannid in Amazonia.

SHARP-TAILED TYRANT *Culicivora caudacuta*

This species occurs locally, but widely, in the open grasslands of Dpto. Beni, where first found by Schmitt & Schmitt (1987). Parker and Gell-Mann observed 4 families (of 5, 4, 4 and 3 individuals) in open, tall *Trachypogon* grassland with only a few widely scattered bushes, c. 26–35 km E of San Borja; another group of 4 was noted 10 km SW of San

Borja. These tiny flycatchers move about in closely knit groups, perching within a few feet of each other at or near the tops of tall grass stalks. After foraging for several minutes in one area they almost invariably fly 50 or more metres to another area. The territory of one pair was at least 300 m^2. They foraged by sally-striking and sally-hovering to grass stalks and foliage of small bushes. They also clung upright to stalks and picked at dried flowers. Among tyrannids, only this species and *Myiornis* spp. have a whirring, hummingbird-like manner of flight. The nasal, rather buzzy call notes of *Culicivora* are far-carrying but easily overlooked. Pairs periodically deliver antiphonal duets (LNS) while perched close together high on grass stalks.

On 2 June 1990 Parker and Castillo found a group of at least 4 *C. caudacuta* in the largest expanse of open grassland c. 7 km E of Ixiamas; this is the first record for Dpto. La Paz, and the westernmost for the species. Another population was discovered in August 1990 by Parker and Rocha on Cerro San Simón, a small, isolated mountain in eastern Beni (Parker & Rocha, in press).

Culicivora caudacuta also inhabits open grasslands (*campo limpo*) of the Serranía de Huanchaca, Dpto. Santa Cruz, at 600–750 m, where found in widely scattered groups of 3–4 individuals during August–September 1989 (pers. obs.; J. Bates, pers. comm.). In drier upland areas *Culicivora* are most often found in lusher areas of sedges and grasses known as valley side campos (see Eiten 1975 for descriptions of *campo* plant communities).

OLIVE-STRIPED FLYCATCHER *Mionectes olivaceus*

One to several individuals observed daily in upland forest at Alto Madidi, and a specimen collected there by A. Castillo (MHNLP) are the first Bolivian records. Singles were noted with most large canopy flocks; they characteristically perched upright, peering about (with bobbing head) for many seconds at a time, and regularly sally-hovered to leaves in the manner of other *Mionectes* spp. 1–3 *M. olivaceus* fed frequently on the large, dark fruits of a small forest tree, *Amaioua corymbosa* (Rubiaceae). These fruits also attracted unusually large numbers of *Dacnis lineata* and *Pipra chloromeros*, and smaller numbers of *Pipra coronata, Chlorophanes spiza* and *Dacnis cayana*.

Phylloscartes sp. nov.

This undescribed tyrannulet was previously known from a small number of specimens and sight records from 4–5 Peruvian localities in Dptos. Huánuco, Pasco, and Cuzco (J. Fitzpatrick, pers. comm.; pers. obs.). Parker, Gell-Mann and S. Beebe studied two pairs in forest canopy on Serranía Pilón at c. 875 m, and tape-recorded two types of vocalization (LNS). The birds foraged in rather sparse, small foliage of forest-edge treetops (esp. *Inga* spp.) 12–18 m above ground. They made short upward sallies (1–2 cm) to leaves and stems. Their horizontal *Phylloscartes* posture (with tail held straight back or slightly cocked) and periodic wing flashes, combined with the chestnut coloration around the eyes, were diagnostic. Calls included a double *chip* note, and a similar note followed by a trill.

SNETHLAGE'S TODY-TYRANT *Hemitriccus minor*

First reported for Bolivia from the Serranía de Huanchaca, Dpto. Santa Cruz by Bates *et al.* (1989), this species is apparently widespread in the eastern third of the country. In August 1990, Parker and Rocha found it to be common in stunted, vine-rich forests along the upper Río Negro at Perseverancia, Dpto. Santa Cruz, and in similar forest at Versalles, Dpto. Beni.

ZIMMER'S TODY-TYRANT *Hemitriccus aenigma*

This enigmatic tyrannid was known from 8 specimens from 4 localities along the Rio Tapajos, Brazil (D. F. Stotz, pers. comm.), and from 6 specimens recently collected in stunted forests (9–12 m tall) on sandy soil in the Serranía de Huanchaca, Dpto. Santa Cruz (J. Bates and Parker, pers. obs.). On 21–22 August 1990 Parker and Rocha found at least 3 vocal individuals at 16–20 m in the canopy of somewhat taller (avg. 20 m), vine-rich forest on lateritic soil c. 1–5 km W of Versalles, Dpto. Beni. Their calls, soft twittering trills (LNS), are fairly loud but ventriloquial and difficult to locate. This species probably occurs widely east of the Río Mamoré in Dptos. Beni and Santa Cruz.

YUNGAS TODY-TYRANT *Hemitriccus spodiops*

Remsen *et al.* (1982) summarized the scanty available information on this Bolivian endemic. It is probably more widespread and common than previously thought, and almost surely occurs in Dpto. Puno, Peru. In June 1989 Parker and Gell-Mann found up to 12 each day in bamboo and dense, shaded forest-edge shrubbery on both slopes of Serranía Pilón above 875 m. Nearly all individuals called from 1–3 m up in bushes and small trees. At least 20 different individuals were heard along c. 4 km of road E and W of the pass. The species was also common in similar habitat at Calabatea, Dpto. La Paz, at c. 1200–1600 m; up to 12 were noted each day along c. 3 km of road; others were heard at a distance in shrubby vegetation and bamboo along edges of natural landslides, this surely being the original habitat of the species. Other records include several tape-recorded by L. Emmons and E. Wolf at the edges of semideciduous forest at Chaquimayo, along the Río Machariapo, c. 17 km N of Apolo, Dpto. La Paz.

PLUMBEOUS TYRANT *Knipolegus signatus*

A male perched 1–2 m above ground on bamboo stalks in forest-edge at the road pass on Serranía Pilón at c. 1000 m is the first record for Dpto. Beni. The bird was uniformly ash grey, with red eyes and a whitish, dark-tipped bill; it looked very like LSUMZ specimens of nominate *signatus* from northern and central Peru, which are noticeably larger and darker soot-grey or blackish, with 'brown' or 'chestnut' eyes. These morphological differences suggest that two species may presently comprise *signatus*.

COCK-TAILED TYRANT *Alectrurus tricolor*

This beautiful species is known from only 3 Bolivian localities (Bond & Meyer de Schauensee 1942, Remsen 1986). We found it to be uncommon and local in the most extensive, open grasslands c. 15–35 km E of San Borja; a few were also noted 9–11 km SW of San Borja along the road to Yacumo. On 24 June 1989 we found 10 males, 7 with or near single females, and on 25 June 4 males (3 with females) were seen. Males were widely separated, all at least 300 m apart, in nearly pure stands of *Trachypogon* grassland 1–1.5 m tall. This habitat was muddy underfoot and is probably inundated during the wet season. All individuals perched conspicuously near the tops of grass stalks, occasionally dropping deep into the grass (presumably to capture insects) or sallying to nearby stalks. They also sallied 4–8 m up into the air in pursuit of small insects in flight. Flying females usually stimulated males to undertake flight displays. The full male display is spectacular: the bird flies (silently) with rapid, shallow wingbeats in a low arc over the grass, gradually reaching a height of 3–6 m, while flicking its broad, flag-like outer tail feathers well above the back. These flights vary in length depending upon the location of visible females, but probably average 30–40 m. Inexplicably, we found no *Alectrurus* in large areas of seemingly suitable habitat (pure stands of tall grass) east and west of the above localities. Its relative scarcity and patchy distribution suggest that the species may be sensitive to a variety of factors such as seasonal flooding, overgrazing and trampling by cattle, and frequent burning.

On 2 June 1990 Parker and Castillo found 4 male and 3–4 female *A. tricolor* in tall, nearly pure grassland c. 7 km E of Ixiamas, Dpto. La Paz; this is the first record for the department and westernmost ever for the species. Although *Alectrurus tricolor* occurs mainly in upland (*campo limpo*) grasslands in central Brazil (pers. obs.), it appears to frequent both well-drained and seasonally flooded grasslands in Bolivia.

STREAMER-TAILED TYRANT *Gubernetes yetapa*

Like *Alectrurus tricolor* and *Culicivora caudata*, this grassland species occurs very locally and in small densities, in tall grasslands with scattered trees and bushes. In June 1989 we found it to be relatively numerous (as compared to its scarcity in at least 4 Brazilian *campo* localities frequently visited by Parker); at least 7 pairs or families (of 4–5 individuals) were noted during two mornings of fieldwork c. 11–50 km east of San Borja; several pairs were also observed near the Estación Biológica del Beni.

On 2 June 1990, Parker and Castillo found 3 pairs (1 with 2 immatures) along c. 2 km of road through open grassland with scattered trees c. 6–8 km E of Ixiamas. The species had not previously been found west of the Río Beni, or in Dpto. La Paz. At both Ixiamas and San Borja, *Gubernetes yetapa* was found in tall grasslands (of *Trachypogon* spp. mixed with other coarse, tall grasses) that are inundated during the wet season. Trees (especially *Curatella americana*) and shrubs are conspicuous but widely spaced. Whether *Gubernetes* moves seasonally to this habitat from well-drained areas is not known.

These flycatchers perch conspicuously atop bushes and isolated, small trees, and drop into the grass or onto open ground in pursuit of large arthropods, including grasshoppers and beetles. They also make long flights to capture flying prey, especially grasshoppers, and a pair was once observed clinging to tassles at the ends of grass stalks, where they captured two brownish caterpillars about 4 cm long. Pairs of adults aggressively defend very large territories of at least 500 m^2; in response to playback of calls or songs they invariably fly (from as far as 300 m away) directly toward the sound source and land on the nearest tree or bush, where they perform an extraordinary visual and vocal display well described by Belton (1985).

WHITE-THIGHED SWALLOW *Neochelidon tibialis*

One was collected (MHNLP) on 23 May 1990 by Castillo from a group of 6 perched on bare branches in the top of a tall forest tree above a small stream at Alto Madidi; other small groups (4–8) were observed on two days flying low through the canopy of hilly upland forest at the same locality. These are the first records for Dpto. La Paz, and only the second for Bolivia (see Parker & Remsen 1987).

TAWNY-HEADED SWALLOW *Alopochelidon fucata*

At least 6 of these swallows were observed flying low and high over dry grassland with scattered trees c. 27 km E of San Borja, Dpto. Beni, on 25 June 1989. Several were 'singing' while in flight (LNS), which suggests that the birds represent a resident population. The habitat (*campo sujo*) is very like that preferred by breeding *A. fucata* in central Brazil (pers. obs.). Two others were seen over open grassland c. 40 km E of San Borja on 24 June. These are the first records of this species for Dpto. Beni.

CHESTNUT-BREASTED WREN *Cyphorhinus thoracicus*

On 7 June 1990 Parker heard the unmistakable songs of a pair of this species in a densely vegetated ravine in mossy forest near Calabatea at 1400 m, c. 33 km SW of Apolo, Dpto. La Paz. Although this is the first report of *C. thoracicus* for Bolivia, it has been collected (LSUMNS) at Abra Maruncunca, 10 km SW of San Juan del Oro, Dpto. Puno, Peru, within a few kilometres of the Bolivian border.

LAWRENCE'S THRUSH *Turdus lawrencii*

Parker & Remsen (1987) reported the first Bolivian records from Dpto. Pando. The species also occurs widely in Dpto. La Paz, where found to be fairly common in tall floodplain forest along the lower Río Heath within 30 km of Puerto Pardo in August 1988 (up to 10 heard each day); it was rare or not vocal in similar forest at Alto Madidi in May 1990 (calls of only 2 were heard during two weeks), and one was heard in full song in swamp forest at the edge of Laguna Santa Rosa, along the lower Río Tuiche on 22 June 1990. The latter is the southernmost (14°30′S) locality for the species.

VIOLACEOUS JAY *Cyanocorax violaceus*

Recent Bolivian records, the first for Dpto. La Paz and second for the country (see Parker & Remsen 1987) include a flock of 5 flying over second-growth forest c. 3 km N of Rurrenebaque, and another group heard in forest-edge trees c. 15 km S of Tumupassa. In May 1990 two flocks (of 6 and 7 individuals) were constantly in second-growth woodland and young river-edge forest within 1 km of the Alto Madidi camp.

These birds were usually found in association with large mixed foraging flocks of oropendolas and caciques (especially *Psarocolius angustifrons, P. decumanus* and *P. bifasciatus*). This jay is apparently fairly common at the base of the Andes in Dpto. La Paz, and probably occurs, at least occasionally, south of the Río Beni in Dpto. Beni. It is replaced in the gallery forests and cerrado at Ixiamas, and in second-growth forests to the south, by *Cyanocorax cyanomelas*.

MASKED CRIMSON TANAGER *Ramphocelus nigrogularis*

One collected on 24 May 1990 by Castillo in tall swamp forest at Alto Madidi, where uncommon, is the first specimen for Bolivia, although sight records from the Río Tahuamanu above Porvenir, Dpto. Pando, were reported by Parker & Remsen (1987).

OPAL-CROWNED TANAGER *Tangara callophrys*

A pair tape-recorded (LNS) in the tops of tall upland forest trees at Alto Madidi on 24 May 1990, and a few others observed with large canopy flocks of *Tangara* spp. and other tanagers at the same locality, represent the second Bolivian record (see Parker & Remsen 1987), and southernmost ever for the species. This tanager was observed on one occasion with a small group of Opal-rumped Tanagers *T. velia,* not previously recorded in Dpto. La Paz, and 6–8 Paradise Tanagers *T. chilensis*.

BLACK-AND-WHITE TANAGER *Conothraupis speculigera*

A female-plumaged individual observed by Parker in river-edge forest vine tangles (4–6 m above ground) at Alto Madidi on 28 May 1990 is the first record for Bolivia. The bird associated with a large mixed-species flock comprised of *Ramphocelus carbo, Thryothorus genibarbis* and other medium-sized insectivores. The *Piranga*-like shape and size of the bird, its olive upperparts and pale yellowish underparts, and the diagnostic streaking on its breast were all noted. This species should be looked for, especially from June to August, in floodplain forests throughout upper Amazonia (see Isler & Isler 1988).

CASQUED OROPENDOLA *Psarocolius oseryi*

One tape-recorded (LNS) in forest-edge trees along the airstrip on 26 May 1990, and later seen several times in riverine forest at Alto Madidi, represents the first record for Bolivia. The species is probably more numerous in foothills west of Alto Madidi, and will probably also be found along the Río Heath to the north. It is fairly common in upland forests of the Tambopata Reserve, Dpto. Madre de Dios, Peru, not far to the northeast.

Acknowledgements

We would like to thank the following organizations and individuals for their help and support of our fieldwork in Bolivia: Museo de Historia Natural (La Paz), Museo de Historia Natural Noel Kempff Mercado (Santa Cruz), Instituto de Ecología (La Paz), Centro de Datos para la Conservación (La Paz), Centro de Desarollo Forestal (Santa Cruz), Parque Nacional Noel Kempff Mercado, Stefan Beck, Teresa Centurión, Robin Clark, Eduardo Forno, Maria Marconi, Arturo Moscoso, Walter Vandiver, Nestor Ruiz, Marcelo Sommerstein, and Marcelo Zalles. Parker's work in Bolivia was made possible by a

MacArthur Foundation grant to Conservation International (Washington, DC), as well as by the Louisiana State University Museum of Natural Science. Special thanks are due Hermes Justiniano and the Fundación Amigos de la Naturaleza (Santa Cruz) for their unflagging support and logistical help on two major expeditions. We also thank the following colleagues for permission to publish their observations: J. Bates, S. Beebe, T. J. Davis, L. Emmons, J. W. Fitzpatrick, R. Foster, A. Gentry, S. L. Hilty, H. Justiniano, P. Marra, C. Munn, D. Ricalde, K. R. Rosenberg, C. Walton, E. Wolf and W. Wust. Finally, J. V. Remsen, K. R. Rosenberg and J. Bates reviewed the manuscript and provided numerous suggestions for its improvement.

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Taxonomic status of the Sword-billed Hummingbird *Ensifera ensifera caerulescens*

by Gary R. Graves

Received 24 November 1990

Ensifera ensifera caerulescens (Lowe, 1939) was described from an unique specimen in the Royal Albert Memorial Museum, Exeter. According to Lowe (1939: 73) the new taxon is distinguished by "its smaller dimensions and by having the sides of the neck and band across the chest, when held to the light, bright metallic blue". Walters (1986) was apparently the first since Lowe to critically examine the type. He confirmed Lowe's diagnosis and concluded that *caerulescens* may be a valid taxon and that there was no reason to suppose that the colour was due to an aberration. As part of a comprehensive review of Sword-billed Hummingbird systematics I examined the type of *E. ensifera caerulescens*. Here I present evidence that casts doubt on its taxonomic validity.

The specimen is a taxidermy mount with head and bill tilted upwards to the left; the left side of the neck and upper breast are slightly concealed from view. The plumage is faded, especially the throat and breast. When male specimens of nominate *E. ensifera* are viewed head-on in direct light, the lower throat is bordered posteriorly from shoulder to shoulder by a brilliant green pectoral band. In *caerulescens*, the colour of the pectoral band is bluish-green (changing with the angle of inspection) on the exposed right side, becoming slightly greener on the concealed left side. The feathers that reflect the bluest light when viewed head-on are violet or bluish-violet in indirect light. These are asymmetrically distributed; about twice as many violet feathers occur to the right of the ventral midline as to the left. When viewed under a 7-30 × stereo microscope the bases of violet feathers that are concealed by overlapping feathers are green as in nominate *E. ensifera*. In other words, only portions of the pectoral feathers that are exposed to light are violet.

The asymmetric distribution of blue or violet feathers strongly suggests that the distinguishing character of *caerulescens* is an artifact, possibly the result of exposure to light. The occurrence of unfaded feather bases in the affected area corroborates that possibility. In sum, the evidence indicates that the distinguishing character of *E. e. caerulescens* Lowe, 1939 is due to postmortem change. It should thus be placed in the synonymy of *Ensifera ensifera* (Boissoneau, 1839).

Acknowledgements

I am grateful to Kelvin Boot, Curator of the Royal Albert Museum, for lending the type of *E. e. caerulescens* and to the United States Department of State for safely transporting it to Washington. I thank Richard Banks for commenting on the manuscript and Banks, Ralph Browning, and Richard Zusi for examining the specimen.

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Taxonomic comments on the Dunlin *Calidris alpina* from northern Alaska and eastern Siberia

by M. Ralph Browning

Received 27 November 1990

The population of *Calidris alpina* that breeds north of the Brooks Range in northern Alaska was considered by the American Ornithologists' Union (1957) to belong to the subspecies *pacifica* Coues, 1861 of western Alaska. That northern population is now referred to either *arcticola* Todd, 1953 (Browning 1977, Cramp & Simmons 1983, Morrison 1984, Greenwood 1986), or *sakhalina* Vieillot, 1816 (MacLean & Holmes 1971, Prater *et al.* 1977, Johnsgard 1981, Hayman *et al.* 1986), the subspecies that also breeds in northeastern Siberia (Kozlova 1962, Vaurie 1965).

Calidris alpina is now known to breed also to the south on the Kamchatka Peninsula (Tomkovich 1986) and Sakhalin Island (Nechaev 1978). Tomkovich (*op. cit.*) defined the range of *sakhalina* as the Chukotsky Peninsula, Anadyr' Lowlands and Wrangel Island of northeastern Siberia, and proposed the subspecific name *kistchinski* for birds that breed on the Kamchatka Peninsula, northern Kuril Islands, southwestern Koryak Highlands, and the northwestern coast of the Sea of Okhotsk. He characterized *arcticola* as differing from *sakhalina* only in the colour of the back, and *kistchinski* as differing from *sakhalina* in the longer exposed culmen and more heavily speckled black plumage with narrower and less rusty borders of the dorsal feathers. Another subspecies, *litoralis*, was proposed by Nechaev & Tomkovich (1987) for birds that breed on northern Sakhalin Island. The name *litoralis* is preoccupied by *Tringa littoralis* Brehm, 1831, and the new subspecies was renamed *actites* by Nechaev & Tomkovich (1988). *Calidris a. actites* was characterized as the smallest (wing, culmen, weight) of the subspecies in eastern Siberia and northern Alaska and with a blacker crown than in *kistchinski*.

My earlier study (Browning 1977) included a series from Gizhiga, Siberia, as *sakhalina* but according to Tomkovich (1986) the specimens are from the range of *kistchinski*. Because of this, and because other studies (e.g. Greenwood 1986) of the species did not include specimens from the range of the newly described taxa from eastern Siberia, I have reevaluated *arcticola*, *sakhalina* and the new subspecies. This study included specimens of *sakhalina*, *kistchinski* and *actites* selected by Dr

TABLE 1

Measurements of exposed culmen and wing length of specimens of *Calidris alpina* from their breeding ranges in northern Alaska and Siberia

Taxon	Exposed culmen n	 range	 mean±SD	Wing (chord[1,2]; flattened[3,4]) n	 range	 mean±SD
males						
arcticola	56[1]	29.8–38.7	33.6±1.7	12[2]	114.1–122.7	117.7±2.7
sakhalina	29[3]	30.4–36.0	32.9±1.4	26[3]	111.5–122.0	117.4±2.7
	7[2]	29.7–36.6	32.0±2.4	7[2]	112.8–117.2	116.5±2.6
kistchinski	14[3]	31.4–38.3	34.5±2.1	14[3]	111.5–122.0	115.8±2.8
	5[2]	30.4–31.3	33.0±1.7	6[2]	113.5–120.1	115.5±2.6
actites	5[4]	28.4–31.3	29.2±1.2	6[4]	104.5–111.0	107.6±2.7
	6[2]	28.5–29.6	29.1±0.3	6[2]	105.3–110.3	107.4±1.6
females						
arcticola	47[1]	31.3–39.8	36.4±1.8	10[2]	113.9–121.0	117.0±2.0
sakhalina	14[3]	34.5–40.4	37.0±1.6	12[3]	112.5–125.5	120.5±3.6
	6[2]	33.7–43.0	37.4±3.4	6[2]	119.0–121.5	121.0±1.4
kistchinski	9[3]	36.7–40.6	38.8±1.4	10[3]	117.0–124.0	121.1±2.8
	6[2]	37.3–40.0	38.5±0.8	7[2]	113.5–121.4	118.5±2.7
actites	1[2]	33.0		1[2]	111.2	

[1] Browning (1977).
[2] This study.
[3] Tomkovich (1986).
[4] Nechaev and Tomkovich (1987).

Tomkovich, Zoological Museum, Moscow. My evaluation of the subspecies in *C. alpina* is based on birds from their respective breeding ranges. Comments on the non-breeding distributions are limited to a few specimens that I was able to identify to subspecies; many non-breeding birds from Europe (Gromadzdka 1989), Meininger & van Swelm 1989), as well as most from Siberia and Alaska, cannot be identified to subspecies.

I found geographic variation in size between some populations. The means of measurements for the exposed culmen are similar in *arcticola*, *sakhalina* (*sensu* Tomkovich 1986, and as defined below) and *kistchinski*, including specimens from Gizhiga, and are larger than in *actites* (Table 1). Although Greenwood (1986) gave a larger mean for wing length (flattened) in *arcticola* than in *sakhalina*, I found that the wing chords of these two subspecies and of *kistchinski* are similar. The shorter wing chord in *actites* does not overlap the range of the other subspecies (Table 1). Weights of males collected in July from northern Alaska range from about 48 to 68 g with the mean about 55 to 61 g (Holmes 1966a). The mean for birds collected in June, July and August is 55.4 g (MacLean & Holmes 1971). Males from Siberia collected in July ranged from 42 to 55 g (mean 48.6) in *sakhalina*, 43.7 to 46.8 g (mean 45.8) in *kistchinski*, and three males of *actites* were 35.5, 36.0 and 40.2 g (Nechaev & Tomkovich 1987).

Geographic variation is greater in plumage colour and pattern than in size. The rusty colour of the back is slightly more reddish and darker in *arcticola* than in *sakhalina* and *kistchinski*. The edges of the back feathers are more yellow in *kistchinski* than in *arcticola* and *sakhalina*. The amount of black on the back feathers and crown is similar in *arcticola* and *sakhalina* but is greater in *kistchinski*, and is noticeably greatest in *actites*. The extent of black streaking on the upper breast is more extensive in *kistchinski* than in *arcticola* and *sakhalina* and is still more extensive in *actites*. Specimens from Gizhiga are similar to other specimens of *kistchinski* in dorsal colour and pattern. I did not find dark streaks on the undertail coverts in specimens of *arcticola*. Two of 7 males and 3 of 6 females of *sakhalina* have indistinct dark streaks, 6 of 7 males and 4 of 7 females of *kistchinski* are noticeably streaked, and 3 of 6 males of *actites* have indistinct streaks on their undertail coverts. This character is apparently subject to individual variation in the taxa from Siberia. Nechaev & Tomkovich (1987) reported that undertail streaks are present in most specimens of *sakhalina* and *kistchinski* and in only one specimen of *actites*. The extent of white on the leading edge of the eighth primary, a character contributing to wingbars (Hayman *et al.* 1986), is usually greater in *arcticola* than in *sakhalina* (Greenwood 1986). I found that the amount of white on the leading edge of the eighth primary in *kistchinski* ranges from very little to as much white as in *arcticola*. I found no white in *actites*; Nechaev & Tomkovich (1987) reported only one specimen of *actites* as having a white 'speculum' or wing-bar.

I conclude that the populations breeding in northern Alaska, eastern Siberia and Sakhalin comprise four subspecies. The subspecific characters and remarks on distribution of the subspecies follow.

Calidris a. arcticola (type locality Point Barrow, Alaska) differs from *sakhalina* by its greater weight, greater amount of white on the leading edge of the eighth primary, and slightly more reddish and darker rust colour dorsally. *Calidris a. arcticola* is redder on the back and has fewer black feathers on the back and crown than in *kistchinski* and *actites*. Birds from northern Alaska also lack the black streaks on the undertail coverts usually present in the subspecies from Siberia. The breeding range of *arcticola*, north of the Brooks Range, Alaska, is separated by about 260 km from the range of *sakhalina* and about 300 km from the range of *pacifica*. Five specimens (USNM 93208–93211) of *arcticola* from Point Barrow, Alaska, in winter plumage are darker grey dorsally and the few rusty feathers are redder than 4 specimens (USNM 81415, 81417, 348997, 348998) of *sakhalina* from the Chukotsky Peninsula. A specimen (USNM 465837) collected on Little Diomede Island, Alaska, in June (Kenyon & Brooks 1960) is an example of *arcticola*. Breeding *arcticola* banded at Point Barrow were recaptured in October at Cape Lazarev, Siberia, and Sakhalin Island (Norton 1971). Greenwood (1984) considered *arcticola* to migrate only to Asia. A series (USNM 526466–526471) collected near Seoul, Korea, in April are typical *arcticola*.

Calidris a. sakhalina differs from *kistchinski* by its darker (less golden) rusty back and reduced amount of black on the crown and upper breast. This subspecies differs from *arcticola* as characterized above and is less black and larger than *actites*. Specimens in winter plumage have fewer black feathers dorsally than do *kistchinski*. The western limit of the breeding range of *sakhalina* is dependent on the acceptance of *centralis*

Buturlin, 1932 of the Yakutsk region, a subspecies not widely recognized (Ferns 1981, Greenwood 1986). A female (ZIAS 160504) from Cape Chaplin, Chukotsy Peninsula, identified as *pacifica* by Portenko (1972), is actually an example of *sakhalina*.

Tomkovich (1986) concluded that the description of *sakhalina* by Vieillot (1816) and the painting of a Dunlin by Tilesius (*in* Krusenstern 1814), which Vieillot cited, cannot be identified to any particular subspecies of *C. alpina*. Although Tomkovich contacted most European and Asian museums, he could not locate Tilesius' specimen of *C. alpina*. (Tomkovich did not list the Paris Museum among the many museums he contacted, nor did he note that Svetovidov [1981] had reported that Cuvier received several holotypes from Tilesius from Petersburg that remained in Paris. Nonetheless, there is no record in the Paris Museum of Tilesius' specimen of *C. alpina* [C. Erard, in litt.].) I agree with Tomkovich that the name *sakhalina*, as described, is a *nomen dubium*. Tomkovich (1986) preserved the name *sakhalina* by designating as a neotype an adult male in the collection at the Zoological Museum of Moscow State University. The locality of the neotype, and thus the type locality of *sakhalina*, is the headwaters of the Kanchalan River (75 km west of Egvekinot), Chukotsky Autonomous Region.

Calidris a. kistchinski (type locality Moroshechnaya River, western Kamchatka) is less black above and larger than *actites* and is more black dorsally with the edges of the back feathers more yellow than in *arcticola* and *sakhalina*.

Calidris a. actites (type locality shore of Chayvo Bay, Sakhalin [Island]) differs from the other subspecies in having more feathers edged with black, especially on the crown, and in usually lacking white on the leading edge of the eighth primary. The rust colour of the back of five of the seven specimens available is paler than in *kistchinski*. Specimens of *actites* are lighter in weight, and are shorter in exposed culmen and wing chord than the other subspecies in this study.

Two adult males (USNM 165045, 165046) from St Lawrence Island, Alaska, where *pacifica* breeds (Sauer & Urban 1964), and a female (UA 5615) from Attu Island, Alaska, are unlike *arcticola* and *pacifica* in having faint black streaks on their undertail coverts. The three specimens are within the range of variation in size for all western subspecies but *actites*. The moulting inner primaries of the two males, collected 13 July, suggest that the birds may have bred on St Lawrence Island; according to Greenwood (1983), birds from Siberia and Alaska moult while on the breeding grounds. However, some birds from northern Alaska migrate before completion of primary moult (Holmes 1966b, 1971). Because *kistchinski* and *pacifica* moult at the same time as reported by Holmes (1971) for birds from northern Alaska (P. S. Tomkovich, *in litt.*), some individuals of *sakhalina* may also migrate before moulting all of their primaries. Based on colouration and moult, the two males are most likely darker representatives of *sakhalina*; based on colouration of the plumage, the female collected 1 June is most similar to typical *kistchinski*. Although the three specimens cannot be positively identified to subspecies, they probably represent birds from the populations that breed in eastern Siberia. Other Palearctic taxa are known from St Lawrence Island (Fay & Cade 1959, Sealy *et al.* 1971), and from other islands off Alaska (e.g. Thompson & DeLong 1969, Byrd *et al.* 1974, Gibson 1981, Byrd & Day 1986), and from the nearby mainland (Kessel & Gibson 1976).

Acknowledgements

I thank P. Tomkovich, Zoological Museum, Moscow State University; V. Loskot, Zoological Institute, Academy of Sciences (ZIAS), Leningrad; American Museum of Natural History, New York; and D. D. Gibson, University of Alaska, Fairbanks, for the loan of critical specimens. Other specimens included those in the National Museum of Natural History (USNM), Washington DC. Appreciation is extended to the Natural History Library, Smithsonian Institution, for providing translations of two of the original descriptions. I thank C. Erard, Paris Museum, for searching for the type of *sakhalina*. I also thank P. Tomkovich and R. B. Clapp for their remarks on an earlier draft of the manuscript, and R. C. Banks and T. H. Fritts, who made several helpful comments on the present version.

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Discovery of the nest of Humblot's Flycatcher *Humblotia flavirostris*

by M. Herremans, M. Louette & J. Stevens

Received 28 November 1990

Humblot's Flycatcher forms a monotypic genus, probably close to *Muscicapa* (Benson 1960). The species is confined to a few thousand hectares of mountain forest on the slopes of the Karthala volcano (Louette 1988), which dominates the southern half of Grand Comoro island. Although confiding and rather common, nothing is known as yet about the species' breeding habits, despite the breeding grounds having been well explored on some occasions (1965, 1983, 1985) during the presumed breeding period (October–November). Benson (1960) speculated that the finding of a nest would be of particular interest in establishing the affinities of this peculiar bird.

On 12 November 1989, when carrying out point-transect counts in the Karthala forest just north of M'Lima Manda (1050 m a.s.l.) on behalf of an ICBP bird inventory project, M.H. observed a pair of *Humblotia* with food. It turned out that he was standing right under an active nest. The surrounding habitat was a low, rather open type of pioneer woodland on the southern of the two lava flows to the north of M'Lima Mani. The canopy height was only about 12–15 m, and the nest was situated in the mid stratum. The nesting tree had a stem of about 15 cm diameter, was about 8 m high and had a crown with rather dense, stiff, leathery foliage. The nest was in the upper branches, and hidden among the foliage. At least two young were begging. Food items brought to the nest were seen at close range on five occasions. Four of these were single, large centipedes (*Chilopoda*), and in the remaining case the bird carried two items, one of which was long-legged and presumably a mantis or large spider.

The spot was revisited on 17 December in order to collect the nest. No droppings or feather sheaths remained in it, making it questionable that the young fledged successfully. The nest was an untidy cup or bowl of mosses, lined on the inside with dry grasses, simply resting on (not attached to) some smaller branches of the tree-top (not a fork). The internal diameter of the cup was 5.5 cm and its depth 4 cm. Externally the nest was 7 cm deep, and its base was 15 cm long and 12 cm wide. It was collected and is now stored in the KMMA Museum, Tervuren, Belgium (nr. 90-01-A-1).

Is there information for the evaluation of the affinities of *Humblotia* in the position of the nest, its simple shape or its constituent materials? These features are rather diverse in African *Muscicapa* (Erard 1990), but among the species studied in Gabon, in its site and construction the nest of *Humblotia* comes close to that described for *Muscicapa sethsmithi*, also a forest species. Based on information on the nest alone, there is apparently no strong reason for sustaining the genus *Humblotia* apart from *Muscicapa*.

Acknowledgements

The authors' birding activities on Grand Comoro were sponsored by the ICBP project 22/KM/3. D. Tonnoeyr is thanked for help and for putting on a brave face during the second strenuous walk to M'Lima Manda.

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A new subspecies of *Xiphocolaptes major* (Vieillot) from Argentina

by José Maria Cardoso da Silva & David C. Oren

Received 29 November 1990

Xiphocolaptes major (Vieillot) is a large dendrocolaptid (>90 g) with a distribution that includes Brazil in Mato Grosso and Mato Grosso do Sul, northern and eastern Bolivia, and Argentina from Jujuy to Córdoba and Santa Fé (Meyer de Schauensee 1970). There are three recognised subspecies (Peters 1951): *X. m. remoratus* Pinto, known only from the type locality, Fazenda Aricá-mirim, on the banks of the lower rio Aricá, Mato Grosso; *X. m. castaneus* Ridgway of Bolivia, southwestern Mato Grosso and northern Mato Grosso do Sul in Brazil, and northwestern Argentina in the Provinces of Jujuy and Salta, where it intergrades with the nominate subspecies; and *X. m. major* (Vieillot), from Paraguay and Argentina in Chaco, Córdoba, Estero, Formosa, Santa Fé and Santiago (Fig. 1).

X. m. remoratus is similar to the nominate subspecies, having, however, "the pileum and mantle less light, brownish olivaceous (instead of greyish brown), the throat whitish only on the median portion, and not as light as the other, and the underparts less tinged with rusty" (Pinto 1945). *X. m. castaneus* differs from *X. m. major* by the "pileum decidedly darker, russet brown or dusky brown (instead of buffy brown); chestnut of upper parts on average deeper, and lower surface somewhat darker, more rusty cinnamon" (Hellmayr 1925).

While reviewing specimens of *X. major* deposited at the American Museum of Natural History, New York, we found that a series of six specimens from the Province of Tucumán, Argentina, possess much lighter plumage colouration than specimens from nearby localities attributed to the nominate race. We propose that this population be known as

Xiphocolaptes major estebani subsp. nov.

Holotype. American Museum of Natural History, AMNH 524675, adult male collected at Tápia (26°36′S, 65°18′W), Tucumán, Agentina. Collected by L. Dinelli on 14 Sep 1902. Field Number 1847.

Diagnosis. Colours in capitals with numbers in parentheses refer to Smithe (1975, 1981). Similar to *X. m. major* (Vieillot), differing by the plumage in general being much paler, with crown between Light Drab (119C) and Dark Drab (119B), instead of Antique Brown (37); back between Brussels Brown (121B) and Mikado Brown (121C), instead of Raw Sienna (136); feathers of the breast and belly with centres Clay Color (26) and borders Cinnamon (123A), instead of Raw Umber (123) and Antique Brown (37), respectively; tail Russet (34), instead of Warm Sepia (221A).

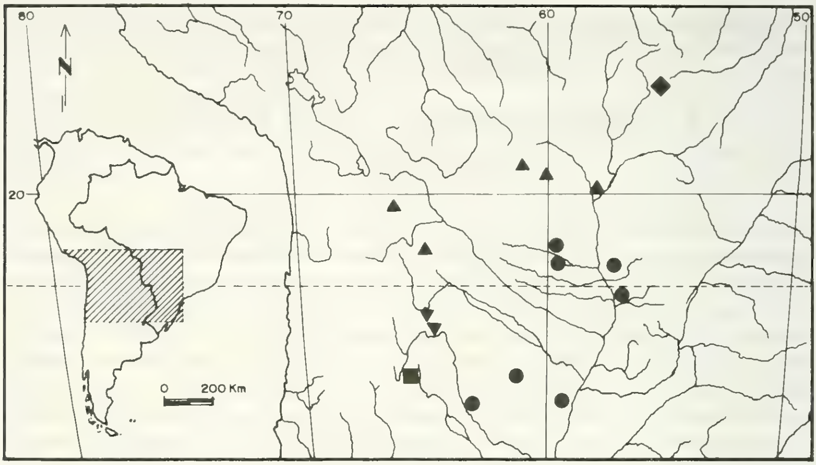

Figure 1. Distribution of the subspecies of *Xiphocolaptes major*. ◆ = *remoratus*; ▲ = *castaneus*; ● = *major*; ■ = *estebani*; ▼ = intergrades between *castaneus* and *major*.

Measurements of the holotype (in mm). Wing ('flat'), 155.0; tail, 109.5; bill (from insertion to tip), 59.5; tarsus, 30.0.

Paratypes. Three males, AMNH 524676, 524677 and 524678, collected by L. Dinelli on 24 Oct 1901 (first two) and 19 Sep 1902 (last); and two females, AMNH 524679 collected by L. Dinelli on 24 Oct 1901, and AMNH 524682 collected by S. Venturi on 8 Jul 1900, all from the type locality.

Distribution. Known from the type locality and Tafi Viejo, Prov. Tucumán, Argentina (*apud* Esteban 1948), and the surrounding region.

Etymology. The subspecific name honours Argentine ornithologist Juan G. Esteban, who was the first to do a complete revision of the Dendrocolaptidae of his country (Esteban 1948).

Comments. *X. m. castaneus* has plumage which is much more reddish than *X. m. major* and *X. m. estebani*. *X. m. remoratus*, based on the original description, is darker than the nominate subspecies (Pinto 1945) and, consequently, than *X. m. estebani*.

The paratypes show uniformity in the diagnostic characters. Two females (AMNH 524679 and 524682) have very indistinct transverse black bars on the abdomen, these being almost absent in 524682. The other specimens all have well-marked abdominal bars. Comparative measurements of *X. m. major*, *X. m. castaneus* and the newly proposed subspecies are presented in Table 1. The observed differences in measurements were not statistically significant for any character, perhaps in part because of the small sample sizes.

A single male (AMNH 524680), also labelled from the type locality and supposedly collected together with female paratype AMNH 524682 by Venturi, is indistinguishable from the nominate subspecies, while another male (AMNH 524681), collected by the same Venturi, labelled

TABLE 1

Comparative measurements (in mm) of three races of *Xiphocolaptes major*. For samples of 5 or more, the first number is the mean, followed by the standard deviation in parentheses

	Wing	Tail	Bill	Tarsus
X. m. major				
7 ♂♂	150.8 (3.8)	107.4 (5.8)	56.7 (1.1)	30.3 (3.1)
12 ♀♀	148.7 (4.2)	110.0 (3.6)	57.5 (1.9)	30.3 (2.2)
X. m. castaneus				
1 ♂	142.0	106.0	—	30.5
2 ♀♀	141.0, 142.0	103.0 ($n=1$)	52.0, 55.0	28.0, 30.5
X. m. estebani				
5 ♂♂	153.2 (4.0)	109.9 (5.4)	58.2 (1.1)	30.7 (1.9)
2 ♀♀	149.0, 155.0	109.0 ($n=1$)	59.0, 61.5	30.5, 34.5

from "Ocampo, Chaco" (Villa Ocampo is, in fact, in Santa Fé Province, according to Paynter 1985) is typical of *estebani*. These two specimen labels most certainly were inadvertently exchanged. S. Venturi was an Italian resident in Argentina, whence he sent a bird skin collection of 1115 specimens for sale to the Rothschild Museum in Tring, England. The Venturi collection was made between 1898 and 1906 at diverse localities in the Provinces of Buenos Aires, Santa Fé, Tucumán and Jujuy (for details, see Hartert & Venturi 1908). Whether the accidental label exchange was made by Venturi or in Tring is unclear.

Acknowledgements

We are grateful to the staff of the ornithology section of the American Museum of Natural History, especially Mary LeCroy, George Barrowclough, and François Vuilleumier, for numerous courtesies extended during our visit to the collections under their care.

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The occurrence of biannual primary moult in passerines

by R. P. Prys-Jones

Received 2 December 1990

The occurrence within individuals of biannual complete moults which include all the primary feathers appears to be an uncommon feature of passerine biology. In Table 1, I summarize those species for which I found positive, published information during research for a paper on the biannual primary moult of the Willow Warbler *Phylloscopus trochilus* (Underhill *et al.*, in press). A number of other species may also do so, at least in some individuals, but available evidence remains ambiguous. Examples include the Sedge Wren *Cistothorus platensis*, whose pre-nuptial moult is poorly understood but apparently may sometimes be complete, the Rufous-winged Sparrow *Aimophila carpalis*, whose pre-nuptial moult may on occasion approach being complete, and the Sharp-tailed Sparrow *Ammodramus caudacutus*, whose pre-nuptial moult is variable but often includes at least the outer primaries (Pyle *et al.* 1987). Pallas's Grasshopper Warbler *Locustella certhiola* has been claimed to moult its primaries twice a year (Stresemann & Stresemann 1976), but apparently incorrectly (Svensson 1984), whereas the River Warbler *L. fluviatilis* moults its outer primaries directly following autumn migration and then all its primaries prior to spring migration (Pearson & Backhurst 1983). Evidence of two discrete periods of primary moult each year in certain other sedentary passerines, e.g. the Seychelles Sunbird *Nectarinia dussumieri* (Greig-Smith 1980), the Seychelles Brush Warbler *Acrocephalus sechellensis* (Prys-Jones & Diamond 1984) and certain other warbler species (K. Baker, pers. comm.), requires further investigation before conclusions can be drawn regarding how frequently individual primaries are replaced. In addition, ambiguous statements regarding the occurrence of "two complete moults" may not infrequently be found, e.g. for the White-winged Triller *Lalage sueurii* (Smythies 1985).

The seven species in Table 1 comprise six separate families, long-distance migrants as well as residents, insectivores and omnivores, inhabitants of open country as well as dense cover, and forms which have both one and two breeding cycles per year. The Brown Shrike *Lanius cristatus* is very closely related to both the Red-backed Shrike *L. collurio* and the Isabelline Shrike *L. isabellinus*, the whole forming one "complicated, marginal superspecies" (Voous 1979), which in turn is closely related to the Thick-billed Shrike (Harrison 1982). Despite their close phylogenetic, ecological and migratory similarities, the moults of members of the superspecies diverge strikingly. Both the Red-backed Shrike and the Isabelline Shrike only have one moult of their primaries in the year (Stresemann & Stresemann 1972a, Voous 1979). In the Red-backed Shrike, the flight feathers are renewed only in the winter quarters, whereas different populations of the Isabelline Shrike may moult their

TABLE 1
Passerine species known to undergo two complete primary moults in a year

Family	Species	Authority
Campephagidae	Ashy Minivet *Pericrocotus divaricatus*	Stresemann & Stresemann 1972b
Troglodytidae	Marsh Wren *Cistothorus palustris*[1]	Kale 1966, Pyle *et al.* 1987
Sylviidae	Willow Warber *Phylloscopus trochilus*	Ticehurst 1938, Underhill *et al.* (in press)
Laniidae	Brown Shrike *Lanius cristatus*	Medway 1970, Stresemann & Stresemann 1971
Laniidae	Thick-billed Shrike *Lanius tigrinus*	Stresemann & Stresemann 1971
Emberizidae	Rufous-crowned Sparrow *Zonotrichia capensis*[2]	Miller 1961, King 1976
Icteridae	Bobolink *Dolichonyx oryzivorus*	Pyle *et al.* 1987

[1] Possibly not in all subspecies.
[2] Only equatorial populations.

flight feathers after the breeding cycle or delay until reaching the winter quarters. Complications in primary moult strategy among closely related forms are still more apparent in the Rufous-collared Sparrow *Zonotrichia capensis* species complex, in which the moulting patterns of the various races and populations "exhibit an almost bewildering diversity" (King 1976). All populations have a complete post-nuptial moult following the main nesting season, but only equatorial resident populations additionally have a second complete moult; other sub-equatorial and higher latitude populations supplement their complete moult by additional partial moult of greatly varying degree and timing.

Kale (1966) concluded that "the evolution of dissimilar moulting patterns in ecologically similar and phylogenetically related species is intriguing". This still remains the case, with more subtle ecological, behavioural and/or physiological factors than those mentioned above apparently being involved. Presumably a key factor relates to the rate at which the primaries are worn away, regardless of whether this is caused by dense vegetation, long-distance migration or structurally weak composition. A pointer in this direction is provided by comparison of the Willow Warbler with the Arctic Warbler *Phylloscopus borealis*. Over 50 years ago, Ticehurst (1938) drew attention to the fact that the Arctic Warbler, with a migration about equally as long as the Willow Warbler, has only a single annual primary moult, in winter, whereas the Willow Warbler has two. Despite this, adult Arctic Warblers are known to have their remiges in good condition as they start their autumn migration, despite having worn them through both spring migration and breeding (Svensson 1984).

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Geographical variation in the Saffron-billed Sparrow *Arremon flavirostris*

by José Maria Cardoso da Silva

Received 3 December 1990

The Saffron-billed Sparrow *Arremon flavirostris* is a 30 g sparrow of forest undergrowth, which occurs in the southern half of Brazil, eastern Bolivia, Paraguay and northern Argentina (Meyer de Schauensee 1982). It is characterized by a mostly orange-yellow bill with a black ridge, black head with a barely suggested grey stripe along the median portion of the pileum, white superciliary that is variable in extension, black auriculars, grey or olive-green back, and mostly white underparts with a black pectoral band.

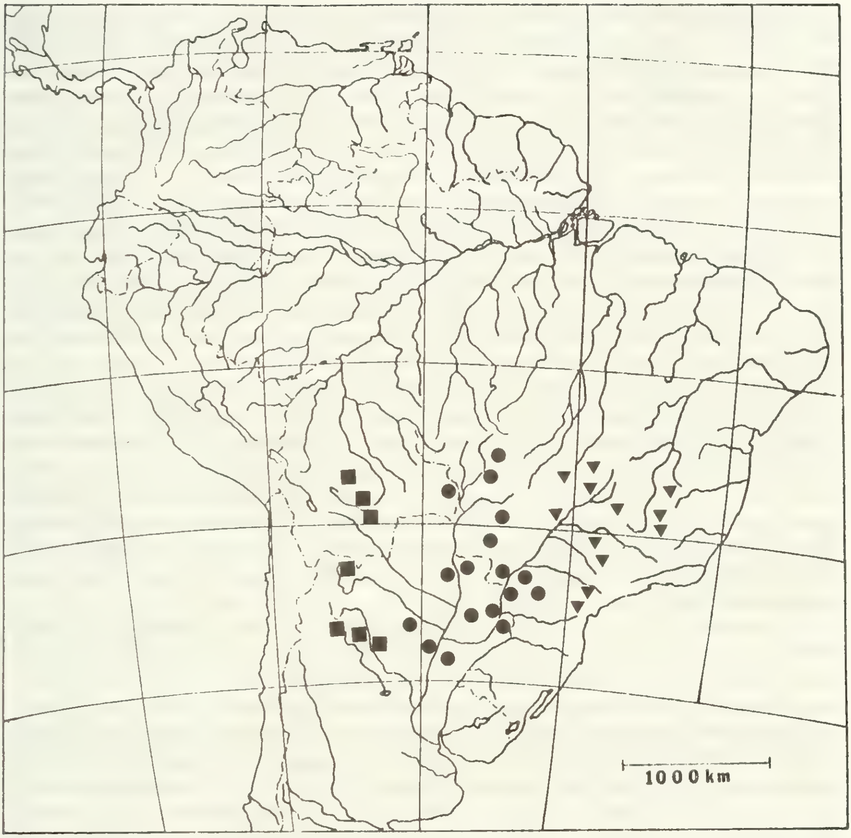

Figure 1. Distribution of *Arremon flavirostris*: ▼, *A. f. flavirostris*; ●, *A. f. polionotus*; ■, *A. f. dorbignii*.

The last comprehensive review of the geographical variation of *A. flavirostris* was carried out by Hellmayr (1938), who recognized two groups of subspecies: the green-backed group (*flavirostris* and *dorbignii*) and the grey-backed group (*polionotus* and *devilli*).

The taxonomy of the green-backed group is well resolved. *A. f. flavirostris* Swainson, 1837 is characterized by white superciliaries which start just above the eye. It is found in central-eastern Brazil (Fig. 1), in the states of Bahia, Minas Gerais, northeastern São Paulo, southeastern Goias, southeastern Mato Grosso do Sul (Hellmayr 1938, Pinto 1944, Paynter 1970) and eastern Paraná (F. C. Straube). *A. f. dorbignii* Sclater, 1856 is very similar to *A. f. flavirostris*, but differs in that its white superciliaries are longer, beginning near base of the bill. It is found (Fig. 1) from Bolivia (La Paz, Cochabamba and Santa Cruz) to Argentina in Jujuy, Tucumán and Catamarca (Hellmayr 1938, Paynter 1970).

The geographical ranges and diagnostic characters of the subspecies of the grey-backed group have been disputed. *A. f. polionotus* Bonaparte, 1851 was described from a specimen collected in Corrientes, Argentina. The type locality of *A. f. devilli* Des Murs, 1856 has not yet been designated. The label of the holotype, collected by Castelnau's expedition to South America, records "Province of Goyas" (Hellmayr 1938). This is a mistake, because all collections subsequently made in Goias have recorded only *A. f. flavirostris* (Pinto 1936, Hellmayr 1938, Silva 1989). Hellmayr (1938) stated that *polionotus* occurs in Paraguay, Argentina (Formosa, Chaco, Misiones and Corrientes) and western Paraná, while *devilli* occurs in western São Paulo, Mato Grosso and Mato Grosso du Sul and Chiquitos, Bolivia. Pinto (1944) disagreed with this statement and classified the specimens from Mato Grosso as *polionotus*, limiting the distribution of *devilli* to western São Paulo.

These discrepancies are the result of the lack of consistent diagnostic characters to distinguish the two subspecies. Both subspecies have short superciliaries similar to *A. f. flavirostris*. Hellmayr (1938) stated that *devilli* is "Very similar to *A. f. polionotus*, but upper parts paler gray with a slight olivaceous suffusion, and black jugular narrower". However, a few paragraphs later he qualifies this statement: "While the narrow jugular band (from three to seven millimeters wide) serves to distinguish this form from *polionotus*, the coloration of the back is not an absolutely constant feature . . .".

To resolve this question, I have examined 55 specimens of the two subspecies deposited at the American Museum of Natural History. I agree with Hellmayr that colouration of the back is not a consistent difference between these populations of *Arremon flavirostris*. I measured the width of the pectoral band in 33 males of '*polionotus*' and 19 males of '*devilli*'. In *polionotus* the range of this measurement was 6.0–11.0 mm (median = 8.2; s.d. = 1.6), while in *devilli* it was 5.0–10.0 mm (median = 6.9; s.d. = 1.2). The difference in the range of measurements for *devilli* recorded by me and by Hellmayr may be due to differences in skin preparation between the series he examined and those in AMNH. While the means in my data for pectoral band width are significantly different (Student's $t = 3.07$; df $= 49$; $P < 0.001$), the measurement overlap is extensive and it is impossible to allocate individual specimens to either subspecies. Based on these observations, I propose that *devilli* be synonymized with *polionotus*, which has priority.

The three subspecies of *A. flavirostris* are well differentiated. In addition, no hybridization zone between these populations is known. Thus, they could be considered distinct species, whether the phylogenetic species concept (Cracraft 1983, McKitrick & Zink 1988) or the biological species concept (Mayr 1963) is utilized. However, I prefer to await new specimens from possible intergradation zones before proposing this change of rank. In general, *flavirostris* and *dorbignii* are the most similar to one another, but they are geographically separated by the very distinct *polionotus* (Fig. 1). This pattern is similar to cases of "leapfrog" distribution in Andean birds (Remsen 1984).

To generate a hypothesis on the relationships between the subspecies of *A. flavirostris*, I performed a cladistic analysis (Wiley 1981) of the two apparently informative plumage characters. *A. t. taciturnus*, the nearest hypothesized relative (Sick 1986), was used as the out-group.

The olive-green back colouration that is shared by *flavirostris* and *dorbignii* can be considered plesiomorphic because it is encountered in *A. t. taciturnus* and is widespread in *Arremon*. Grey back colouration is unique in this genus and is here interpreted as an autapomorphy of *polionotus*.

The extension of the white superciliaries is another character useful for phylogenetic inference. Long white superciliaries extending very nearly to the base of the bill occur in the out-group, and therefore can be considered plesiomorphic. Short white superciliaries are therefore interpreted here as a synapomorphy of *flavirostris* and *polionotus*.

Based on these two characters, Hellmayr's (1938) hypothesis on the relationships within *A. flavirostris* superspecies is invalid, because the character taken to be a phylogenetic indicator (olive-green back) for proximity between *flavirostris* and *dorbignii* is a plesiomorphy. On the other hand, *flavirostris* and *polionotus* share a synapomorphy (short while superciliaries), supporting the hypothesis that both are nearer to one another than either is to *dorbignii*.

This preliminary analysis supports the hypothesis that the leapfrog pattern of geographical variation of plumage colouration in *A. flavirostris* was produced by the retention of a primitive character by geographically extreme taxa (*flavirostris* and *dorbignii*) with a more rapid phenotypic differentiation in the central taxon (*polionotus*).

Acknowledgements

I thank D. C. Oren, F. C. Novaes, S. Ferrari, R. O. Prum and D. W. Snow who have provided useful comments and helped at various stages of this study. I am also grateful to G. Barrowclough and M. LeCroy for giving me all facilities in examining specimens in AMNH. Financial support came principally from WWF-USA, Conselho Nacional de Desenvolvimento Científico e Tecnológico and The Frank M. Chapman Memorial Fund.

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Annotated checklist of the bird species of the upper Rio Urucu, Amazonas, Brazil

by Carlos A. Peres & Andrew Whittaker

Received 4 December 1990

Few surveys of avian communities in Brazilian Amazonia have been undertaken. Access to surveyed sites has usually been made possible by rivers or roads. Anthropogenic changes at these sites, such as habitat disturbance, hunting, or both, then tend to obscure the composition and structure of pristine avifaunas. Moreover, accessible sites with little or no habitat disturbance usually consist of black-water (*igapó*) or white-water (*várzea*) flood-plain forests because logistical problems become severe away from navigable rivers.

Recent studies in lowland Amazonia, however, demonstrate the pervasive influence of habitat selection in birds (e.g. Terborgh *et al.* 1984, 1990). Flood-plain communities are thus likely to differ sharply from those in the more remote upland (*terra firme*) forest, particularly in areas far removed from large rivers and tributaries. Factors which help explain the wholesale dichotomy between these two major Amazonian forest types include the lack of hydroperiodicity and seasonal influx of nutrients into *terra firme* forest, as well as a sharp decrease in the level of habitat diversity the greater the distance from large rivers.

Here we report on the results of an 18-month survey of an entirely undisturbed, non-hunted *terra firme* forest site near the upper Urucu river, Tefé, Amazonas (4°50′S, 65°16′W), representing to date one of the few avian surveys in western Brazilian Amazonia.

Study site and methods

The Urucu site lies peripheral to an oil field recently developed by the Brazilian oil company, Petrobrás. This capital-intensive operation has to date minimized forest disturbance through heavy use of aircraft transportation (Peres 1988, 1990a). During the study period, access to drilling rigs was restricted to helicopters or small aeroplanes controlled by the company. Both Indians and colonists had been and remained conspicuously absent from this area. Thus selective logging, slash-and-burn agriculture, rubber-tapping of *Hevea* trees and subsistence hunting had never taken place in the study area.

The study area of 800 ha was located within a drilling polygon, and consisted primarily of undisturbed *terra firme* forest, between 60 and 72 m above sea-level (Fig. 1). Anthropogenic disturbance was restricted to two 3-ha seismic clearings. Annual rainfall was 3256 ± 589 mm ($n=2$ years), only 9% of which fell between July and September, the three driest months of the year. Trees ≥ 10 cm in diameter had a mean density of 723 individuals per hectare ($n=5$ ha), and treefall gaps were relatively uncommon (Peres, unpubl. data). A single meandering perennial stream cut through the study area, resulting in low levels of natural disturbance.

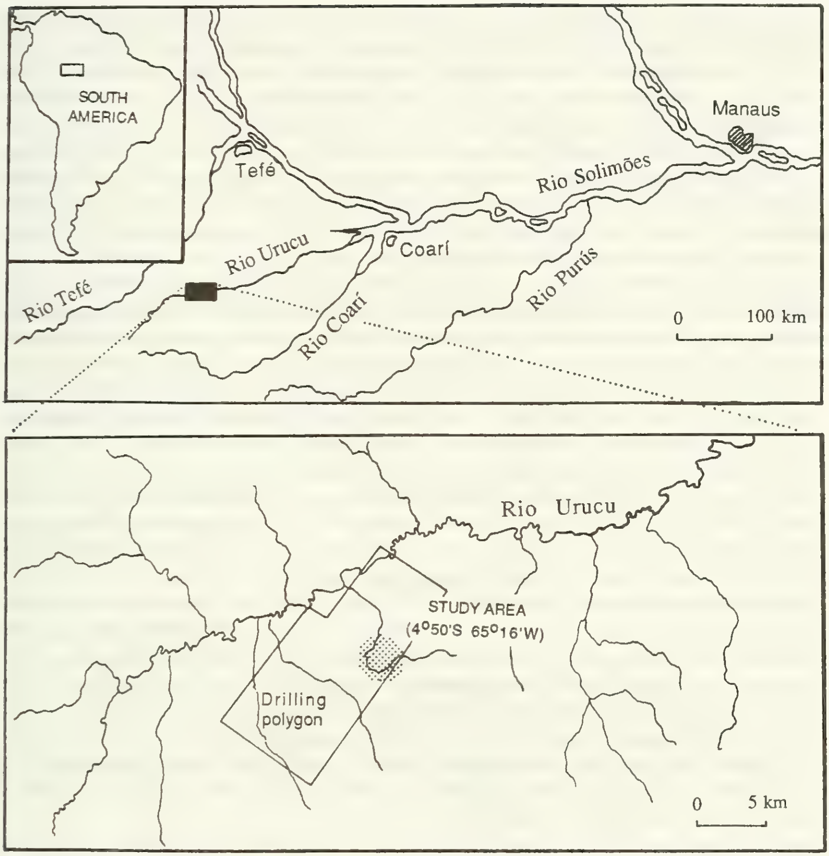
SOUTH AMERICA
Manaus
Tefé
Rio Solimões
Coarí
Rio Urucu
Rio Tefé
Rio Purús
Rio Coarí
0 100 km
Rio Urucu
STUDY AREA
(4°50'S 65°16'W)
Drilling polygon
0 5 km

Figure 1. Location of the survey site on the upper Rio Urucu, Amazonas, Brazil. Shaded area represents the *terra firme* plot where 94% of the 365 species listed were recorded. Fine lines indicate perennial forest streams.

A number of smaller rain-fed streams flowed into this perennial creek, but dried out during the dry season. Sudden rises in the stream water-level caused temporary floods following heavy storms (>100 mm per day), particularly in the wet season. This phenomenon, locally known as *repiquete*, generated and maintained a sparser understorey, higher density of lianas, higher density of non-arborescent palms, overall lower density of trees, and an average lower canopy (Peres, unpubl. data).

Habitat types

Vegetation structure was quantified within two 1-ha floristic plots and twelve 0.25-ha plots, and along 4.9 km of transects within the study area. We also examined a topographic map of this area, defined by 5-m contour lines, which was generated by a seismic survey. The following forest habitat types emerged from this floristic and topographic analysis:

(1) High forest. This dominant vegetation type covered 93% of the study area, and consisted of tall (38–45 m), undisturbed forest on rolling hills differing in heights by up to 18 m. Emergents of 45–55 m were not uncommon and the understorey was relatively sparse.

(2) Creekside forest. This forest type ran along a perennial black-water stream, with a width ranging between 1 and 7 m. Its water level rose sharply during the first half of each year when it often spilled over adjacent forest levées following heavy rainstorms.

(3) Forest edge. This consisted largely of thick second-growth around two 3-ha man-made clearings and along a small internal road-network within the Urucu drilling polygon. Seismic clearings were originally created by chain-saws, and then left to regenerate. Roads were cut by bulldozers, and incidental damage caused by the treefall 'domino-effect' was considerable within a strip of 15 m on each side of the road. Clearings and roadsides offered satisfactory conditions for observing forest-edge canopy species, which were otherwise rarely sighted.

(4) *Igapó* forest. This habitat did not occur in the actual study area, but 4 km from it, running along both sides of the Urucu river. The *igapó* forest was flooded for 3–4 months each year, and had a strip-width of 50–250 m depending on local topography and the river water level, which fluctuated considerably throughout the year. Several bird species, which appeared not to occur in unflooded forest, were documented in this forest type during infrequent canoe trips and dry-season transect walks. The present list is however biased against *igapó* and riverine species as an artifact of reduced sampling effort along the river.

Although forest types (1), (2) and (3) represented 98% of the study area, other minor habitats, mostly open or scrubby, were important to a number of bird species. These additional habitats will be briefly described in the Appendix codes.

Avian survey

The list here compiled began with a 3-week transect census of the Urucu primates conducted by CAP in April 1987 (Peres 1987, 1990a), only 5 months after Petrobrás began operating in the area. The other half of all species listed were recorded during a continuous study period between February 1988 and September 1989. Records were based primarily on intensive observations, and to a lesser extent mist-netting and vocalizations, live or recorded. More than 3240 h of field time were logged in 32 observer-months. A total of 252 bird species (69% of the overall total) were recorded by positive sightings, almost always confirmed by subsequent sightings and vocal cues. Another 108 (29.6%) species were recorded by captures, mostly by mist-nets. Only 5 species (1.4%) were identified on the basis of voice alone. We faced few 'difficult' species-identifications; thus collection of specimens was not a normal part of our mist-netting protocol.

We accumulated a total of 1964 mist-net hours, using mist-net lines of 5, 16 and 30 nets (2.5 × 12 m, $1\frac{1}{4}$ inch mesh) stretched along 1.5-m wide transects cutting through all vegetation types. Mist-nets targeted to habitat-specialists were placed alone, or in pairs, in a particular site (e.g. treefall gaps, near forest streams). Netted birds were identified using field guides applicable to this region (e.g. Hilty & Brown 1986, Meyer de Schauensee & Phelps 1978, Ridgely & Tudor 1989, Frisch 1981, Dunning 1982). Birds were then photographed, measured, weighed, banded and released on site. Both understorey and midstorey flocks were censused regularly from the ground at least once monthly. Canopy flocks were observed from a canopy platform placed at 42 m above ground in the crown of a tall emergent tree in high forest, along road-side forest edge, and from two seismic clearings. In addition to a refined trail-grid covering the study area, we also used a 5-km transect cutting farther inland from the Urucu River. M. Cohn-Haft, who visited the site, and one of us (AW) had had very wide previous experience with bird vocalizations elsewhere in central Amazonia and could distinguish voices of most cryptic or canopy species.

Nearly one half of the species listed were also recorded during a 3-week survey conducted in May 1987 in another *terra firme* site named Igarapé Açú (4°30′S, 64°29′W), located 110 km downriver from the upper Urucu site. These species are indicated in the Appendix if they were not recorded in the main survey site (see Notes on species list).

Results

The checklist

A total of 365 bird species were recorded in the upper Urucu basin, mostly within the actual study area (see Appendix). A minimum of 226 species (61.9%) co-existed microsympatrically in the predominant habitat type—high forest—representing a very high level of species-packing. The remaining 139 species occurred in one or more of the other habitats. Nomenclature and sequence of families follow Morony *et al.* (1975), but we follow Meyer de Schauensee (1966) for the Furnariidae, and Traylor (1980) for the Tyrannidae, Pipridae and Cotingidae. Tityras and becards are listed in the Cotingidae.

Noteworthy records

Here we highlight important records for Neotropical ornithology, primarily in terms of species distributions. Several species recorded in the upper Urucu were not previously known from this part of Amazonia. Important records in terms of geographic locality are of two types: those outside a species' range, thus defined as actual range extensions (REx), and those inside a species' range (WR), but bridging large gaps within a poorly known distribution. One species, a puffbird, could not be easily identified and is described on the basis of two prolonged sightings. Many of these bridging records are not very surprising since this site stands almost alone in a large, poorly-known region south of the Amazon and west of the Purús river, covering a small area between regions with relatively well documented avifaunas. In addition, we provide some additional notes on the curious rarity of certain game species, or on species which were presumed to be recent colonizers of the newly created scrubby and open habitats.

Unidentified species. One of the 365 species recorded, a puffbird, presented us with a serious identification problem: it had neither been described nor illustrated in any of the reference guides. Unfortunately, we were unable to collect voucher specimens of this species. A detailed description was however recorded by CAP as follows.

The two individuals seen, undoubtedly belonging to the genus *Nystalus*, were overall similar to the Barred Puffbird *N. striolatus*. *Fine black streaks*, rather than bars, were however obvious on the rufous crown, buffy-yellow nuchal collar, sides of face and upper breast, as well as on the sharply contrasting white underparts. Black streaks were also visible on the back, but the undertail was finely barred black. The chin and surrounding mouth parts were white, and the iris and bill yellowish. On one occasion, 10 July 1989, what appeared to be a heterosexual pair perched motionless for 15 minutes on terminal overhanging twigs 2 m above a 4-m wide open-water forest stream. This pair had come from, and subsequently flew into, vine-tangle thickets bordering this perennial stream.

Range extensions. Cases of significant range extensions were recorded for seven species, some of which were previously known only from Manaus, the Guianan shield, or western Amazonia. Following, we briefly mention each of these species.

FIERY TOPAZ *Topaza pyra*

Previously known from northwestern Brazil (upper Rio Negro), southeastern Venezuela, eastern Colombia, eastern Ecuador and southeastern Peru (Hilty & Brown 1986). One specimen, probably a subadult male, was collected on 30 July 1989 (CAP) whilst it was perched over a 3-m wide forest stream, 1 m above open water. This individual and a conspecific were observed flycatching over the stream for periods of approximately 1 minute between consecutive resting bouts.

LANCEOLATED MONKLET *Micromonacha lanceolata*

Its Brazilian Amazonian range is thought to be limited to the upper Juruá river. One individual was sighted and photographed (CAP) while it perched quietly at 3 m above ground in dense high forest.

BROWN-BANDED PUFFBIRD *Notharchus ordii*

One individual of this northern Amazonian and Venezuelan species was observed (CAP) whilst it was perched some 30 m above ground on a detached, roadside snag. This species' range, however, had already been extended southwestwards to northwestern Bolivia (Parker & Remsen 1987).

RUFOUS-WINGED ANTWREN *Herpsilochmus rufimarginatus*

Its nearest previously known localities in Brazilian Amazonia are along the Rio Jarí and south of the Amazon east to Marajó Island. One pair was observed (CAP) from a canopy platform whilst foraging with a mixed-species flock.

GUIANAN GNATCATCHER *Polioptila guianensis*

Its nearest previously known localities are near Manaus (AW, pers. obs.; M. Cohn-Haft, pers. comm.) and in Rondônia (D. Stotz, pers.

comm.). This species, originally thought to be restricted to the Guianas and southwestern Venezuela, was regularly sighted in the canopy accompanying mixed-species flocks.

BLUE-BACKED TANAGER *Cyanicterus cyanicterus*

Previously known from the Guianas and Venezuela (Isler & Isler 1987), and more recently from one site north of Manaus, Brazil (M. Cohn-Haft, pers. comm.). This is to our knowledge the first record south of the Amazon. Groups of 2–5 individuals were sighted 3 times (CAP, AW) with canopy mixed-species flocks.

YELLOW-GREEN GROSBEAK *Caryothraustes canadensis*

Occasionally sighted in the upper canopy with mixed-species flocks. This record expands the species' range westwards, since its nearest known localities are on the lower Rio Negro and Rio Madeira (Ridgely & Tudor 1989).

Range reinforcements. This survey provided geographically intermediate records, or small-scale range extensions, for 9 other species with very spotty records, but likely to occur in this part of central Amazonia.

BANK SWALLOW *Riparia riparia*

The spotty localities in its winter range are strengthened by the record in the Urucu, where flocks in flight were sighted (CAP) several times from large clearings and river margins.

WHITE-THIGHED SWALLOW *Neochelidon tibialis*

Previously not known in a wide band of forest along the central Amazon valley, but known to occur 160 km north of the upper Urucu in the lower Tefé river (Johns, in press). This year-round resident in the Urucu was particularly conspicuous during crepuscular flights along open forest streams in groups of up to 12 individuals.

GREY-CHEEKED THRUSH *Catharus minimus*

The winter range of this boreal species is extended to the Urucu from southern Venezuela, Guyana, Colombia, and parts of western Brazilian Amazonia, where it is a non-breeding visitor. One individual was observed on 5 May 1989 (CAP) perched in the understorey of high forest.

RED-BILLED PIED TANAGER *Lamprospiza melanoleuca*

It was not known to occur in western Brazilian Amazonia west of the Purús and Negro rivers (e.g. Willis 1977). Common in groups of 2–5, often with mixed-species flocks in the canopy.

MAGPIE TANAGER *Cissopis leveriana*

Previously not known for a broad region north and south of the Amazon river (Isler & Isler 1987). Vocally conspicuous groups of 3–5 were often seen in forest edge, usually in multi-species flocks.

YELLOW-BACKED TANAGER *Hemithraupis flavicollis*

Very spotty records in central Amazonia, but known to occur near Manaus and in northern Mato-Grosso. In the Urucu, it was a consistent member of mixed-species flocks in the canopy.

PARADISE TANAGER *Tangara chilensis*

One of the most common tanagers in the Urucu, apparently functioning as a nuclear species in mixed-species canopy flocks. It is known from peripheral parts of Amazonia, but records are patchy 400 km north and south of the central Amazon. Nearest known localities are near Manaus (Willis 1977) and on the lower Tefé river (Johns, in press).

BANANAQUIT *Coereba flaveola*

This species is thought to be absent from much of west-central Amazonia (Ridgely & Tudor 1989). It was rare or absent in undisturbed *terra firme* forest in the study plot, but was sighted in small agricultural mosaics near the Urucu river.

SWALLOW-TANAGER *Tersina viridis*

Thought to be absent from most of central Amazonia (Ridgely & Tudor 1989). Monospecific groups of up to 8 individuals were seen in the forest edge canopy (18 Jan–23 Feb 1989). It was also common at one site near Carauarí on the west bank of the Juruá river (15 Dec 1988, CAP).

Pioneer species. The upper Urucu is at least 150 km away from the nearest extensive patches of man-disturbed habitats within *terra firme* forest. The patches of upland forest edge, second-growth and open habitats, created since late 1986 by both seismic and drilling clearings, are thus isolated and recently-formed islands of disturbed habitat, available for colonization. The following species are now resident, and can be safely assumed to be recent colonists: *Ramphocelus carbo, Columbina talpacoti, Oryzoborus angolensis, Sporophila bouvronides, Sporophila lineola*. A few migratory species, such as *Tringa solitaria,* currently use high-ground open habitats which were nonexistent as recently as early 1988.

The greater density of dead trees, which resulted from damming of high-forest streams by roads, has increased the availability of nesting and foraging sites for certain woodpeckers using borders with scattered trees such as Yellow-tufted Woodpeckers *Melanerpes cruentatus* and Lineated Woodpeckers *Dryocopus lineatus*. These species also appeared to have become more common in recent years.

Game species. Because this site had not been subject to hunting, some large game birds, which tend to be absent or rare in areas where man regularly hunts, were relatively common in the Urucu (Peres 1990b). Thus we can safely assume that the low density of some other game species was not an artifact of hunting. For instance, Razor-billed Curassows *Crax mitu* were rarely observed, or heard calling, even by two experienced curassow-hunters, perhaps because of the very low availability of residual fruits on the ground, particularly in the dry season (Peres, unpubl. data). Groups of Pale-winged Trumpeters *Psophia leucoptera* and Spix's Guans *Penelope jacquacu* were considerably more common, but both of these species' diets were heavily subsidized by items other than fruitfall (Peres, unpubl. data). Variable Chachalacas *Ortalis motmot* were also very rare, rarely vocal, and apparently transient, probably because their preferred second-growth and riparian habitats were rare in the Urucu.

Tinamous were relatively common, particularly along the main creek. Tinamou-traps (*arapucas*) set within *igapó* forest captured mostly Grey *Tinamus tao* and Cinereous Tinamous *Crypturellus cinereus*. Other tinamou species sighted previously were confirmed by voice.

Other avian surveys

The nearest locality to the Urucu where a bird survey of any kind has been conducted is Ponta da Castanha (Johns, in press) on the Tefé river, 160 km north of our site. At this site forest disturbance such as selective logging and shifting agriculture, coupled with proximity to a large river, has diversified avian habitats. However, only 266 species were detected at the Tefé site, probably because little mist-netting was undertaken. Stotz & Bierregaard (in prep.) and Stotz (unpubl. data) have conducted comprehensive surveys of the avifaunas north of Manaus and on the Rio Ji-Paraná, Rondônia (9°44'S, 61°53'W), respectively. The Urucu site lies roughly half-way between these two localities. Many more detailed avian inventories have been carried out in Colombian, Peruvian and Bolivian Amazonia (e.g. Hilty & Brown 1986, Terborgh *et al.* 1984, Parker & Remsen 1987, British Ornithologists' Union Colombia expedition). We thus hope that the Urucu survey will help to cover a small portion of the immense gap in our knowledge of avian distributions in west-central Brazilian Amazonia, particularly in large stretches of undisturbed forests deep within remote interfluvial regions.

Acknowledgements

This survey was conducted as part of World Wildlife Fund–US project 6199 directed and carried out by CAP. We are indebted to Petrobrás, the Brazilian oil company, for their local support in the Urucu. Our very special thanks to Mario Cohn-Haft, who detected and identified many of the species in the checklist. We also thank A. Carkeek, R. Nonato, N. Whittaker, K. Garcia-Antón and B. Day for help with fieldwork, and Rob Bierregaard, Ted Parker and Martin Kelsey for valuable discussions on the list. Dr D. Snow reviewed the manuscript. AW is a participant in the Biological Dynamics of Forest Fragments Project financed by WWF–US and Smithsonian Institution. A grant from the Brazilian Science Council (CNPq) financed CAP's studies at Cambridge University.

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APPENDIX.

List of 365 bird species recorded on the upper Rio Urucu, Tefé, Amazonas, Brazil

Family and species	Documentation	Habitats	Foraging position	Sociality	Abundance
TINAMIDAE (7)					
Tinamus guttatus	C,V	Fh,Fc	T	S	C
Tinamus tao	C,V	Fh,Fc	T	S	C
Tinamus major	C,V	Fc,Fh	T	S	U
Crypturellus variegatus	V,S	Fc,Fh	T	S	C
Crypturellus cinereus	C,V	Fc,Fh	T	S	C
**Crypturellus undulatus*	C,V	Fi	T	S	U
Crypturellus soui	V,S	Fe,Fh,Fc	T	S	U
PHALACROCORACIDAE (1)					
**Phalacrocorax olivaceus*	S	R,Rm	W	S	C
ANHINGIDAE (1)					
**Anhinga anhinga*	S	Rm,R	W	S	U
ARDEIDAE (7)					
Pilherodius pileatus	S	Cm,Rm,Dw	W	S	U
**Egretta thula*	S	Rm	W	S	U
**Casmerodius albus*	S	Rm	W	S	U
Butorides striatus	S	Cm,Rm	W	S	U
Tigrisoma lineatum	S,V	Cm	W	S	U
Bubulcus ibis	S	Dw	W	G,S	U
Cochlearius cochlearius	S	Rm,Cm	W	S	U
THRESKIORNITHIDAE (2)					
†*Ajaia ajaja*	S	Rm	W	S	U
Mesembrinibis cayennensis	S	Rm,Cm	W	S	U
ANATIDAE (2)					
**Oxyura dominica*	S	R	W	G	U
**Cairina moschata*	S	R	W	S	U
CATHARTIDAE (4)					
Sarcoramphus papa	S	O,Fh,Fi	A	S	R
Cathartes aura	S	O,Fh,Fo	A	S	R
Cathartes melambrotus	S	O,Fh,Fo	A	S	R
Coragyps atratus	S	Fo,O	A	G,S	U

(Continued)

APPENDIX (Continued)

Family and species	Documentation	Habitats	Foraging position	Sociality	Abundance
ACCIPITRIDAE (16)					
Harpia harpyja	S	Fh	C	S	R
Morphnus guianensis	S	Fh	C	S	R
Spizaetus ornatus	S	Fe,Fh	C	S	R
Spizastur melanoleucus	S	Fh,Fe	C	S	R
Leucopternis albicollis	S	Fh	C,Sc	S	R
Leucopternis schistacea	S	Fh,Rm,Cm	Sc	S	R
Leucopternis kuhli	S,V	Fh	C,Sc	S,M	U
**Busarellus nigricollis*	S	Rm	Sc	S	C
**Chondrohierax uncinatus*	S	Rm,O,Fi	Sc	S	R
Buteo nitidus	S	Fh	Sc	S	R
Buteo platypterus	S	Fh	Sc	S	R
Buteogallus urubitinga	S	O,Fh	U,A	S	U
Accipiter superciliosus	S	Fe	Sc	S	R
Ictinia plumbea	S	O	A	S	C
Harpagus bidentatus	S,V	Fh,Fi	Sc	M,S	C
Elanoides forficatus	S	O	A	G	M (Feb 89)
FALCONIDAE (7)					
Falco rufigularis	S,V	Fe,Fo	A,C	S	C
Daptrius americanus	S,V	Fh,Fi	C,Sc,F	G,M	C
Daptrius ater	S,V	Fe,Rm	C,A	S	U
Herpetotheres cachinnans	S,V	Rm,Cm	C	S	U
Micrastur ruficollis	M,S	Fh,Fc	Sc,U	S	U
Micrastur gilvicollis	M,S	Fh	Sc,U	S	U
Micrastur mirandollei	M,S	Fh,Fi	Sc	S	U
CRACIDAE (4)					
Crax mitu	C,V	Fi,Fh	T	S	U
Penelope jacquacu	C,V	Fh,Fi	Sc,T,F	S	C
Aburria (Pipile) pipile	S	Fh,Fi	Sc,F	S	R
Ortalis motmot	S,V	Fo,Fe,Rm	Sc,F	S	R
PHASIANIDAE (2)					
Odontophorus stellatus	S	Fh,Fi	T	G	U
Odontophorus gujanensis	S	Fh	T	G	U
OPISTHOCOMIDAE (1)					
**Opisthocomus hoazin*	S	Rm	Sc	G,S	U
PSOPHIIDAE (1)					
Psophia leucoptera	C,S,V	Fh,Fi	T	G,A	C
RALLIDAE (3)					
Aramides calopterus	V,S	Fi,Cm	T	S	U
Aramides cajanea	V(cp)	Cm,Fi	T	S	C
Laterallus exilis	C	Cm	T	S	C
HELIORNITHIDAE (1)					
Heliornis fulica	S	C,Cm	W	S	U
EURYPYGIDAE (1)					
Eurypyga helias	S,V	Cm,Fc,Fi	T	S	U
CHARADRIIDAE (1)					
**Hoploxypterus cayanus*	S	Rm	T	S	U
SCOLOPACIDAE (1)					
Tringa solitaria	S	Dw,Fo	T	S	M (Jan–Feb 89)
RYNCHOPIDAE (1)					
**Rynchops nigra*	S	R	W	S,G	C
COLUMBIDAE (5)					
Columba subvinacea	S,V	Fc	Sc	S	C
Columba plumbea	S,V	Fe,Fi	Sc	S	C
Leptotila rufaxilla	M,V	Fe,T	T	S	C
Geotrygon montana	M	Fh,Fi	T	S	C
Columbina talpacoti	S	Fo,D,T	T	S,G	U
PSITTACIDAE (14)					
Ara ararauna	S	Fh,Fc	C,F	G,S	C
Ara macao	S	Fh,Fi	C,F	G,S	C
Ara chloroptera	S	Fh,Fi	C,F	G,S	R
Ara severa	S	Fi,Fc	C,F	G	U

(Continued)

APPENDIX (Continued)

Family and species	Documentation	Habitats	Foraging position	Sociality	Abundance
†*Ara manilata*	S	Fi,Fc	C,F	G	U
Amazona autumnalis	S	Fh,Fc	C,F	G,S	C
Amazona farinosa	S	Fh,Fc	C,F	G	C
Deroptyus accipitrinus	S,V	Fh,Fe,Fi	C,F,Sc	G	U
Pionus menstruus	S,V	Fh,Fc,Fi	C,F	G	U
Pionites leucogaster	S,V	Fh,Fc,Fi,Fe	Sc,C,F	G	C
Pionopsitta barrabandi	S	Fh,Fc	C,Sc,F	S,G	R
Pyrrhura picta	S,V	Fe,Fi,Fh	C,Sc,F	G	C
Brotogeris versicolorus	S	Fh,Fe	C,F	G	C,S (Feb–Mar 89)
Touit purpurata	S	Fh	C,F	G	U
CUCULIDAE (6)					
Neomorphus pucheranii	S,V	Fh,Fc	T	S,M	U
Piaya cayana	S	T,Fe	Sc	S	C
Piaya melanogaster	S	Fh,Fe	Sc	S,M	C
Piaya minuta	S	Fh	Sc	S	U
Crotophaga major	S,V	Cm,Rm	V	G,S	U
Crotophaga ani	S	Fo,T	V	G	C
STRIGIDAE (5)					
Ciccaba huhula	S,V	Fh	Sc	S	U
Glaucidium brasilianum	S	Cm,Fc,Fh	Sc,U	S	C
Glaucidium minutissimum	V (mch)	Fh,Fe	Sc	S	U
Otus watsonii	V (mch)	Fc	Sc	S	C
Pulsatrix perspicillata	S	Fh,Fc	Sc	S	U
NYCTIBIIDAE (2)					
Nyctibius grandis	S,V	Fh	C	S	C
Nyctibius leucopterus	H	Fh	C	S	U
CAPRIMULGIDAE (4)					
Podager nacunda	S	D	T	G	S (13 Mar 89)
Nyctidromus albicollis	S	Fe,D	T	S	C
Chordeiles minor	S	O	A	G	M (Jan–Apr 89)
Chordeiles acutipennis	H	O	A	G	M (Jan–Apr 89)
APODIDAE (5)					
Chaetura chapmani	S	O	A	G	C
Chaetura cinereiventris	S	O	A	G	C
Chaetura (spinicauda)	S	O	A	G	C
Panyptila cayennensis	S	O	A	S,G	U
Streptoprocne zonaris	H	O	A	G	U
TROCHILIDAE (14)					
Thalurania furcata	M	Fo,Cm	U	S	C
Amazilia versicolor	M	Fh	Sc,C	S	C
Phaethornis philippi	M	Fh,Fc	U	S	C
Phaethornis ruber	S	Fo,T,Fh	U	S	C
Phaethornis superciliosus	M	Fh,Fi	U	S	C
Polyplancta aurescens	M	Cm,Fw	U	S	C
Chlorostilbon mellisugus	S	Fe	U	S	U
Campylopterus largipennis	M	Cm,Fw	U	S	C
Florisuga mellivora	S	Fe,Cm	Sc	S	C
Anthracothorax nigricollis	S	Fe	C,Sc	S	U
Heliothryx aurita	M	Fh,Fi	U	S	C
Threnetes leucurus	M	Fh,Fi	U	S	C
Popelairia langsdorfii	S	Fh	C	S	C
Topaza pyra (REx)	C (cp)	Cm,Fc	U,Sc	S	U
TROGONIDAE (6)					
Pharomachrus pavoninus	S	Fe,Fh	Sc,F	S	U
Trogon viridis	S	Fh,Fe	Sc,F	S	C
Trogon violaceus	M	Fh,Fi	Sc,F	S	C
Trogon melanurus	M	Fh,Fe	Sc,F	S	C
†*Trogon curucui*	S	Fh	Sc,F	S	U
†*Trogon rufus*	S	Fc	Sc,F	S	U
ALCEDINIDAE (5)					
Ceryle torquata	S,V	R,Rm,C	Sc	S	C
Chloroceryle americana	M	C,Cm	Sc	S	C

(Continued)

APPENDIX (Continued)

Family and species	Documentation	Habitats	Foraging position	Sociality	Abundance
Chloroceryle amazona	M	C,Cm	Sc	S	C
Chloroceryle inda	M	C,Cm,Fi	U	S	C
Chloroceryle aenea	M	C,Cm,Fi	U	S	C
MOMOTIDAE (2)					
Electron platyrhynchum	S,V	Fh	Sc	S	U
Baryphthengus martii	M,V	Fh,Fi	Sc,U	S	C
GALBULIDAE (4)					
Jacamerops aurea	S	Fi,Fc	Sc	S	U
Galbula albirostris	M	Fh,Fi	Sc	S,G	C
Galbula tombacea	M	Fe,Fc	Sc	S	C
Galbula dea	S	Fe,Fo	C	S	C
BUCCONIDAE (13)					
Notharchus macrorhynchus	S	Fe,Fh	C	S	C
Notharchus ordii (REx)	S	Fe	C	S	U
Nonnula ruficapilla	S	Fh,Fi	U	S	C
†*Bucco macrodactylus*	S	Fi,Cm	U	S	U
Bucco capensis	S	Fh	Sc,U	S	C
Bucco tamatia	S	Fh,Fi	Sc	S	C
Malacoptila semicincta	S	Fh	U	S	U
Malacoptila rufa	S	Fh,Fi	Sc,U	S	U
Micromonacha lanceolata (REx)	P	Fh	U	S	C
Nystalus sp. (see text)	S (cp)	Cm,Fi	U,Sc	S	U
Monasa nigrifrons	S,V	Fh,Fi,S	C	G,S	U
Monasa morphoeus	M,V	Fe,Fo	Sc	G,S	C
Chelidoptera tenebrosa	S	Fe,Rm,Fo	C	G	C
CAPITONIDAE (2)					
Eubucco richardsoni	S	Cm,Rm,Fi	Sc	S	U
Capito niger punctatus	M	Fh,Fi	Sc,C,F	S,M	C
RAMPHASTIDAE (7)					
Ramphastos (cuvieri/tucanus)	M,V	Fh,Fc,Fi,Fe	Sc,C,F	G,S,M	C
Ramphastos vitellinus	S,V	Fh,Fc,Fi	C,Sc,F	G,S,M	U
Pteroglossus aracari	S	Fh	C	G	U
Pteroglossus flavirostris	M	Fh	C,Sc,F	G	U
Pteroglossus beauharnaesi	S,V	Fe,Fh,Fc,Fi	C,Sc,F	G	C
Pteroglossus inscriptus	S	Fh	C,Sc,F	G	U
Selenidera reinwardtii	M,V	Fh	U,Sc,F	S	C
PICIDAE (12)					
Dryocopus lineatus	S	Fo,Fe	Sc	S	U
Campephilus rubricollis	S	Fh,Fc,Fi	Sc	S,M	C
Celeus elegans	S	Fh,Fc	Sc,F	S	C
Celeus flavus	S	Fi,Fh	Sc	S	R
Celeus torquatus	S	Fh,Fi	Sc	S	C
Celeus grammicus	S	Fh,Fi,Fc	Sc,U	S	C
Piculus chrysochloros	S,V	Fh	Sc	S	U
Piculus flavigula	S,V	Fh,Fi	Sc	S	C
Melanerpes cruentatus	S,V	Fo,Fe	Sc	G,S	C
Veniliornis affinis	S	Fh,Fi	Sc,U	S,M	C
Veniliornis passerinus	S	Fh	Sc	S	U
Picumnus lafresnayi	S	Fh,Fi,Fe	U,Sc	M,S	C
DENDROCOLAPTIDAE (17)					
Dendrocolaptes picumnus	M	Fh,Fc	Sc	S,M	C
Dendrocolaptes certhia	M	Fh,Fc,Fi	Sc,U	S,M	C
Hylexetastes perrotii	S	Fh	Sc	S,M	U
Xiphocolaptes promeropirhynchus	S	Fh	Sc	S,M	U
Dendrocincla merula	M	Fh,Fc	U	A	C
Dendrocincla fuliginosa	M	Fh,Fc	U	A,M,S	C
Campylorhamphus procurvoides	S	Fh,Fc,Fi	Sc,U	M,S	U
Xiphorhynchus ocellatus	M	Fh	Sc,U	M	C
Xiphorhynchus guttatus	M	Fh	Sc,U	M	C
Xiphorhynchus pardalotus	M	Fh,Fc	Sc,U	M	C
Xiphorhynchus picus	H	Fh	Sc	S	U
Lepidocolaptes albolineatus	S	Fh	Sc	M	U

(Continued)

APPENDIX (Continued)

Family and species	Documentation	Habitats	Foraging position	Sociality	Abundance
Nasica longirostris	S	Fh,Fc	Sc	M,S	U
Deconychura longicauda	M	Fh,Fc,Fi	Sc,U	M,S	C
Deconychura stictolaema	M	Fh,Fc,Fi	Sc,U	S,M	C
Sittasomus griseicapillus	M	Fe,Fh,Fi	Sc,U	M	C
Glyphorhynchus spirurus	M	Fe,Fc,Fh,Fi	U	S,M	C
FURNARIIDAE (12)					
Automolus infuscatus	M	Fc,Fh	U,Sc	M	C
Automolus rufipileatus	H	Fh	U	M	U
Philydor ruficaudatus	S	Fh,Fc	Sc,U	M	C
Philydor erythropterus	M	Fh,Fc	Sc	M	C
Philydor erythrocercus	C	Fh	Sc,U	M	C
Ancistrops strigilatus	S	Fh	Sc	M	U
Sclerurus mexicanus	M,V	Fh,Fc	U	A,S	C
Sclerurus caudacutus	M,V	Fc,Fh	U	S,A	C
Hyloctistes subulatus	M	Fh	Sc	M	U
Xenops rutilans	M	Fh,Fc	U,Sc	M	C
Xenops minutus	M	Fh,Fc	Sc,U	M	C
Xenops milleri	M	Fh	Sc,U	M	U
FORMICARIIDAE (40)					
Formicarius colma	M,V	Fh,Fc	T	S	C
Formicarius analis	M,V	Fh	T	S	C
Conopophaga aurita	M	Fh	T	S	C
Grallaria varia	S,V	Fh	T	S	C
Chamaeza nobilis	S	Fh,Fc	T	S	C
Hylopezus macularius	S,V	Fh	T	S	C
Phlegopsis erythroptera	M	Fh,Fc	U	A	C
Rhegmatorhina melanosticta	M	Fh,Fc	U	A	C
Rhegmatorhina berlepschi	H	Fh	U	M	U
Gymnopithys salvini	M	Fh,Fc,Fi	U	A	C
Sclateria naevia	M	Fc,Fh	U	S	C
Myrmeciza fortis	M	Fh	U,T	A	C
Myrmeciza hemimelaena	M	Fo,Fc,Fe	U,T	S	C
Myrmeciza hyperythra	M	Fh	U,T	S	U
Hylophylax poecilonota	M	Fh,Fc	U	S	C
Hylophylax naevia	M	Fe,Fh,Fc	U	S,A	C
Myrmoborus myotherinus	M	Fh,Fc	U	S,M,A	C
Myrmoborus leucophrys	M	Fo,Fc,Fe	U	S,M	U
Cymbilaimus lineatus	S	T,Fe	U	S	C
Megastictus margaritatus	S	Fh,Fc	Sc	S,M	C
Thamnophilus murinus	M	Fh	U	S	U
Thamnophilus amazonicus	M	Fo,Fc,Fe	U	S	U
Thamnophilus aethiops	M	Fh,Fc,Fe	U	S,M	C
Thamnophilus schistaceus	M	Fc,Fh	U	S,M	C
Thamnomanes caesius	M	Fh,Fc	Sc,U	M,S	C
Thamnomanes saturninus	M	Fh,Fc	Sc,U	M,S	C
Cercomacra cinerascens	M	Fe,Fh,Fc	U	S	C
Cercomacra (nigrescens)	H (mch)	Fo,Fe	T	S	U
Percnostola leucostigma	M	Fh,Fo	U	S	C
Percnostola schistacea	H	Fh,Fc	U	S	U
Hypocnemis cantator	M,V	Fe,Fo	U	S	C
Drymophila devillei	M	Fo,Fc	U	S	C
Myrmotherula haematonota	M	Fh,Fc	U	M	C
Myrmotherula axillaris	M	Fh,Fc	U	M	C
Myrmotherula longipennis	M	Fh,Fc	U	M	C
Myrmotherula (brachyura/obscura)	S	Fh	Sc	S,M	C
Myrmotherula hauxwelli	M	Fh,Fc	U	M	C
Myrmotherula menetriesii	M	Fh,Fc	U	M	C
Terenura (spodioptila)	S	Fh,Fc	Sc,C	M	C
Herpsilochmus rufimarginatus (REx)	S (cp)	Fh	C	M,S	U
TYRANNIDAE (45)					
Pitangus sulphuratus	S	Fo	A	S	U
Tyrannus melancholicus	S	Fo	C	S	U

(Continued)

APPENDIX (Continued)

Family and species	Documentation	Habitats	Foraging position	Sociality	Abundance
Tyrannus savana	S	D,Dw	A,Sc	G	C
Tyrannus tyrannus	S	Fe	C	S	U
Tyrannopsis luteiventris	S,V	Cm,Fe	Fe,V,F	G	C
Myiodynastes maculatus	S	Fe,Fo	C	S,G	U
Conopias parva	S,V	Fh,Fe,Fc	C	S	C
Legatus leucophaius	S,V	Fe,Fh	C,F	S	M (2 Jan 89)
Empidonomus varius	S,V	Fe,Fh	C	S	M (Apr 89)
Empidonomus aurantioatrocristatus	S,V	Fh,Fe	C	M	M (Apr 89)
Attila spadiceus	S	Fh,Fe,Fc	Sc	S,M	C
**Attila cinnamomeus*	S	Rm,Fi	Sc	S	C
Rhytipterna simplex	S	Fh,Fc	Sc,F	S,M	C
Laniocera hypopyrrha	M,V	Fh,Fc	Sc,F	S	U
Ramphotrigon ruficauda	S,V	Fh	Sc	S	C
Ramphotrigon megacephala	S	Fh,Fc	Sc	S	C
Myiopagis caniceps	S	Fh	C	S	C
Myiopagis gaimardii	S	Fh,Fe	C	M	C
Sirystes sibilator	S,V	Fh,Fc	C	M	C
Pyrocephalus rubinus	S	Fo	Sc	S	U,M (23 May 89)
Mionectes (Pipromorpha) oleaginea	M	Fh,Fc,Fi	U,F	S,G	C
Onychorhynchus coronatus	M	Fh	U	S	U
Cnipodectes subbrunneus	M	Fh,Fc	U	S	U
Myiobius atricaudus	M	Fh,Fc	U,Sc	S	C
Contopus virens	S,V	Fo,Fe	Sc	S	M (05 Jan 89)
Camptostoma obsoletum	H	Fe	U,Sc	S	U
Cnemotriccus fuscatus	H	Fe	U	S	U
Myiarchus (ferox)	S (mch)	Fe	Sc	S	C
Elaenia parvirostris	S	Fe,Fc	Sc,C	S	C
Elaenia (flavogaster)	S	Fe	Sc	S	C
Rhynchocyclus olivaceus	H	Fh	Sc	S	U
Platyrinchus coronatus	M	Fh,Fc	U	S	C
Platyrinchus platyrhynchos	M	Fh,Fc	U	S	C
Corythopis torquata	M	Cm,Fc	T	S	C
Tolmomyias sulphurescens	S	Fh,Fc	Sc	S	C
Tolmomyias assimilis	S	Fh,Fc	Sc	S,M	C
Tolmomyias poliocephalus	H	Fh,Fe	Sc	S	U
Tyrannulus elatus	S	Fh,Fe	Sc	S	C
**Knipolegus poecilocercus*	S	Rm,Fi	U	S	C
Todirostrum chrysocrotaphum	S,V	Fh,Fe	Sc	S	C
Zimmerius (Tyranniscus) gracilipes	S	Fh,Fc	C	S	C
Lophotriccus galeatus	M,S	Fh	U	S	C
Terenotriccus erythrurus	M	Cm,Fc,Fe	U	S	C
Hemitriccus zosterops	S,V	Fe,Cm	U	S	C
Hemitriccus (minor)	S	Fh	U	S	U
PIPRIDAE (9)					
Pipra rubrocapilla	M	Fh	Sc,F	G,S	C
Pipra pipra	M	Fc	U,F	S	C
Pipra coronata caelestipileata	M	Fe	U,F	S	C
Piprites chloris	V (aw,mch)	Fh	Sc	M,S	C
Tyranneutes stolzmanni	S	Fh	Sc	S	C
Chiroxiphia pareola regina	M,V	Fc	U,Sc	S,G	C
Machaeropterus regulus	S	Fh	U	S	U
Heterocercus linteatus	S	Fc,Fi	U	S	U
Schiffornis turdinus	M	Fh	U	S	C
COTINGIDAE (11)					
Cotinga cayana	S	Fh,Fe	C,F	S	C
Xipholena punicea	S	Fh,Fe	C,F	S	C
**Querula purpurata*	S	Rm	C,Sc	S,G	U
Gymnoderus foetidus	S	Fh	C,F	S	U
**Cephalopterus ornatus*	S	Rm	C,F	S	U
Iodopleura isabellae	S	Fh	C,F	S	U
Phoenicircus nigricollis	S	Fh	C,F	S	U
Pachyramphus castaneus	S	Fh	Sc	M	U

(Continued)

APPENDIX (Continued)

Family and species	Documentation	Habitats	Foraging position	Sociality	Abundance
Platypsaris minor	S,V	Fh,Fc	Sc,F	M,S	C
Lipaugus vociferans	S,V	Fh,Fc	Sc,F	S,G	C
Tityra cayana	S	Fh	Sc,C	M,S	C
HIRUNDINIDAE (6)					
**Atticora fasciata*	S	R,Rm	A	G	C
**Tachycineta albiventer*	S	R,Rm	A	G	C
Phaeoprogne tapera	S	C,Cm	A	G	C
Riparia riparia (WR)	S (cp)	D,Dw	A	G	M (03 Dec 88)
Neochelidon tibialis (WR)	M (cp,aw)	C,Cm	A	G	C
Stelgidopteryx ruficollis	S	C,Cm	A	G	C
TROGLODYTIDAE (4)					
Cyphorhinus arada	M,V	Fh,Fc	U	S,G	C
Microcerculus marginatus	S,V	Fh	T	S	C
Thyrothorus genibarbis	M	Fh	U	S	C
**Campylorhynchus turdinus*	S,V	Rm,Fe	Sc	G	C
TURDINAE (2)					
Turdus albicollis	M,V	Fc,Fh	Sc,U,F	S	C
Catharus minimus (WR)	S (cp)	Fh	Sc	S	U,M (05 May 89)
POLIOPTILINAE (3)					
Ramphocaenus melanurus	S	Fh,Fc	Sc	M,S	C
Polioptila guianensis (REx)	S (aw,mch)	Fh	C	S	C
Polioptila plumbea	H	Fh	C	S	U
EMBERIZINAE (5)					
Cyanocompsa cyanoides	M	Fh,Fc	U,Sc	S	U
Paroaria gularis	S	Rm,Cm	V	S	C
Oryzoborus angolensis	S	Fo,D	V	S	R
Sporophila bouvronides	S (cp,mch)	Fo,D	V	S	S (Feb–Apr 89)
Sporophila (lineola)	S	D,Fo	V	S	R
CARDINALINAE (1)					
Caryothraustes canadensis (REx)	H (sp)	Fh	Sc	S	R
THRAUPINAE (30)					
Thraupis episcopus	S	Fe,Fo	Sc	G	U
Thraupis palmarum	S	Fe,Fo	Sc	S	U
Cyanicterus cyanicterus (REx)	S (cp,aw)	Fh	C	M	U
Hemithraupis flavicollis (WR)	S (cp,mch)	Fh,Fc	C,F	M	C
Ramphocelus carbo	M	T,Fe,D	V	S,G	U
Tachyphonus cristatus	S	Fh,Fi	C,Sc,F	M	C
Tachyphonus surinamus	S	Fe,Fc	Sc,U,F	M	C
Lanio versicolor	S	Fh,Fc	Sc,U	M	C
Lamprospiza melanoleuca (WR)	S,V (cp,aw)	Fh,Fe	C,F	M,G	C
Nemosia pileata	S	Fe,Fc	C	M	C
**Eucometis penicillata*	S	Rm	V	S	U
Cissopis leveriana (WR)	S (cp,aw)	Fe,Fh	C	M,G	C
Habia rubica	M	Fh,Fc	U	M	C
Piranga rubra	S	Fh	Sc	M	U,M (12 Jan 89)
Euphonia rufiventris	S	Fh	C,Sc,F	M	C
Euphonia laniirostris	S	Fh,Fc,Sc	C,F	M	C
Euphonia chrysopasta	S	Fh,Fc	C,F	S,M	C
Euphonia minuta	S	Fi,Fc	C,F	M	C
Tangara chilensis chilensis (WR)	S (cp,mch)	Fh,Fc,Fe	C,Sc,F	M,G	C
Tangara schrankii	M	Fh,Fc	Sc,C,U,F	G,M	C
Tangara velia	S	Fh,Fc,Fe	C,Sc	M,G	U
Tangara mexicana boliviana	S	Fh	C,F	M	U
Dacnis lineata	S	Fh,Fe,Fc	C,F	M	C
Dacnis cayana	S	Fh,Fe,Fc	C,F	M	C
Dacnis flaviventer	S	Fh,Fc	C,F	M	C
Chlorophanes spiza	S	Fh,Fc,Fe	C,F	M	C
Cyanerpes nitidus	S	Fh,Fe,Fc	C,F	M	C
Cyanerpes caeruleus	S	Fh,Fe,Fc	C,F	M	C
Cyanerpes cyaneus	S	Fh,Fe,Fc	C,F	M	C
Coereba flaveola (WR)	S (cp)	Fe,Fo	C,F	M	R

(Continued)

APPENDIX (Continued)

Family and species	Documentation	Habitats	Foraging position	Sociality	Abundance
TERSININAE (1)					
Tersina viridis (WR)	S (cp)	Fe	C	G,M	C (Jan–Feb 89)
PARULIDAE (1)					
Basileuterus fulvicauda fulvicauda	M,V	Cm,Fc,Fi	W	S	C
VIREONIDAE (4)					
Vireo olivaceus	S	Fh,Fc,Fe	C	M	C
Vireolanius leucotis	S,V	Fh	C	M	C
Hylophilus ochraceiceps	M	Fh,Fc	U	M	C
Hylophilus hypoxanthus	M	Fh	Sc	M	C
ICTERIDAE (4)					
Psarocolius angustifrons	S	Fi,Rm,Fc	C,F	S,M	U
Psarocolius viridis	S	Fh,Fc	C,F	S,M	C
Icterus cayanensis	S	Fo,Fe	Sc	S	S (Jan–Apr 89)
**Cacicus cela*	S	Rm	C	G	C
CORVIDAE (1)					
**Cyanocorax violaceus*	S,V	Rm	Sc	G	C

Codes used in the Appendix

Species list

(REx)	Range extension; nearest known record farther than 400 km.
(WR)	Within species range, but reinforces poorly known distribution.
*	Species recorded along the Urucu River, but not at the study plot.
†	Species record at Igarapé-Açú, but not at the study plot.
(*Genus*)	Alternative or superseded name of genus.
(*species*)	Positive record from the plot; species identity uncertain.
subspecies	Full name listed in case of clearly distinct subspecies.

Documentation

M	Mist-netted.
C	Captured or collected by other means.
S	Confirmed sightings.
P	Sighted and photographed but not captured.
V	Undisputed voice recognition.
H	Hypothetical, seen or heard once, requires confirmation.
(obs.)	Observer(s) identity for noteworthy records: C. Peres (cp), A. Whittaker (aw), M. Cohn-Haft (mch).

Habitats (ordered by decreasing frequency of records)

Fh	Undisturbed high forest.
Fc	Creekside forest; along forest streams only.
Fi	*Igapó* forest; along the Urucu river only.
Fo	Forest openings, usually 4-ha seismic clearings or large treefall gaps.

Habitats (*continued*)

Fe	Forest edge, usually along roads.
R	Urucu river, on water or overhead.
Rm	Urucu river margins.
C	Perennial forest creeks, on water.
Cm	Creek margins.
O	Overhead airspace, soaring, travelling, or feeding in flocks.
T	Thickets of second-growth, usually surrounding clearings.
D	Bulldozer-compacted 4-ha drilling clearings; no second-growth.
Dw	Compacted clearings with standing water.

Foraging position

T	Terrestrial.
U	Understorey.
Sc	Subcanopy.
C	Canopy.
F	Fruit patches.
V	Vine thickets.
W	Water.
A	Aerial.

Sociality

S	Solitary or in pairs.
G	Monospecific groups.
M	Mixed-species flocks or associated with mammal species.
A	Mixed-species flocks following army ants.

Abundance and seasonal status

C	Common.
U	Uncommon.
R	Rare.
M	Long-distance migrant.
S	Seasonal, or short-distance migrant.

IN BRIEF

GREY-TAILED PIHA IN COLOMBIA

A small collection of study skins received in the late 1960s from Colombia included an adult male and female Grey-tailed Phia *Lipaugus subalaris* taken on 15 May 1965 at Mocoa (580 m), Putumayo, by Arturo Pazos. Pazos recorded that the irides were black for both birds. The specimens, now nos 98588 and 98589 in the collection of the Department of Ornithology of the Royal Ontario Museum, are the first reported from Colombia.

Until now, this species has been recorded only on the eastern slopes of the Andes in Ecuador from several localities and one locality in Peru at about 10°40′S (Snow 1982, *The Cotingas*). The Mocoa specimen extends the range about 200 km north of the nearest known locality in Ecuador. Ecuadorean specimens have been collected at altitudes of 850–1350 km. The Colombian record is apparently from the lowest altitude recorded, and strengthens the likelihood that this little known species occupies a lower altitudinal belt than the very similar and better known *L. cryptolophus*, which has been recorded in Ecuador at 620–1750 m (Snow, *loc. cit.*) and in Colombia at 900–2300 m (Hilty & Brown 1986, *A Guide to the Birds of Colombia*).

I wish to thank Dr David Snow for his valuable suggestions and contribution to this ms.

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JAMES A. DICK

6 March 1991

BREEDING OF TAWNY PIPIT IN SOUTHERN MAURITANIA

The presumed breeding of Tawny Pipits *Anthus campestris* in Somalia as reported by Ash & Miskell (1990) recalls similar records by Gee (1984) in southern Mauritania. In July and September (year not precise but lying between 1971 and 1974) birds carrying food were noticed near Nouakchott (18°09′N, 15°58′W). I decided to exclude these observations from a monograph dealing with this species (Isenmann 1985), as they did not seem to be documented well enough to establish breeding. Also, there had been no other evidence to suggest breeding by Tawny Pipits so far beyond their known range. In the light of what has been found in Somalia, I would be now less severe.

References:

Ash, J. S. & Miskell, J. E. 1990. Presumed breeding of Tawny Pipits *Anthus campestris* in the Afrotropics. *Bull. Brit. Orn. Cl.* 110: 222–224.

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PAUL ISENMANN

3 April 1991

AN EXTRA RECTRIX IN THE SMALL GREEN BEE-EATER

Birds with an abnormal number of rectrices either have an unequal number of feathers on the two sides or an additional or missing pair (Somadikarta 1984, Hanmer 1985). Here we report a case of one additional central tail feather found in a specimen of the Small Green Bee-eater *Merops orientalis*.

A total of 131 Small Green Bee-eaters was collected from the field area of the Punjab Agricultural University, Ludhiana (30°56′N, 75°52′E; *c.* 247 m above mean sea level) for morphometry and food studies, and examined for moult. Of these, one collected on 13 September 1985 had three instead of two central rectrices prolonged into blunt pins. The other five pairs of rectrices were normal. The three central tail feathers and the first (adjacent to central), second and fifth pairs had completed the moult; the third and fourth pairs were moulting, the former having attained two-thirds and the latter between one-third and two-thirds of the length of a fully grown feather. The bird, an adult male, was normal in all respects except that its weight was distinctly low (13.2 g) compared to the average weight (16.8 ± 1.2 g, mean ± s.d.; $n = 129$) for this species.

Abnormal numbers of rectrices have been reported in many species of birds (Ginn & Melville 1983, Hanmer 1985, Melville 1985, Saini & Toor 1988). In the family Meropidae, however, only one case has been reported, in an individual of *Merops pusillus* which had one pair less than the normal number of rectrices (Hanmer 1985). The abnormality reported here is the only case known to us of an additional central rectrix. Hanmer (1985) examined over 23,000 birds belonging to 16 families and found that the central pair of rectrices was never aberrant. It has been suggested that extra pairs of remiges/rectrices recorded in some birds are of phylogenetic origin (Hanmer 1985, Saini & Toor 1988), which does not seem to be applicable in the present specimen because only one extra rectrix was recorded. Therefore, the recorded extra rectrix seems to be a result of some developmental abnormality.

We are grateful to Mr Ram Parshad for help in collecting birds and to the Department of Zoology, Punjab Agricultural University, for facilities. Financial assistance was provided by the Indian Council of Agricultural Research through the All India Coordinated Research Project on Economic Ornithology.

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Ginn, H. B. & Melville, D. S. 1983. Moult in Birds. BTO Guide 19. British Trust for Ornithology.
Hanmer, D. B. 1985. Abnormal numbers of tail feathers. *Bull. Brit. Orn. Cl.* 105: 91–95.
Melville, D. S. 1985. Further examples of abnormal rectrices and a case of an extra primary. *Bull. Brit. Orn. Cl.* 105: 95–96.
Saini, H. K. & Toor, H. S. 1988. Aberrant primaries and rectrices in Columbidae. *Bull. Brit. Orn. Cl.* 106: 139–141.
Somadikarta, S. 1984. Polyrectricyly. *Bull. Brit. Orn. Cl.* 104: 60–61.

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MANJIT S. DHINDSA
HARJEET K. SAINI

18 April 1991

SEYCHELLES SUNBIRD *NECTARINIA DUSSUMIERI* PIERCING FLOWERS

It is well known that certain species of sunbird Nectariniidae pierce the base of larger tubular flowers from which they cannot otherwise obtain nectar. According to Gill (1985, in *A Dictionary of Birds,* eds B. Campbell & E. Lack), this habit is normally displayed only by short-billed species though Ali & Ripley (1983, *Handbook of the Birds of India and Pakistan*) give details of two longer-billed species that pierce the base of larger flowers: *Nectarinia lotenia* (bill length 26–29 mm) and *Aethopyga siparaja* (19–23 mm). The Seychelles Sunbird *Nectarinia dussumieri* is one of the longer-billed species, the bills of eleven specimens at the British Museum measuring 24 or 25 mm (seven males) and 23 or 24 mm (four females) (P. Colston, *in litt.*). It thus might be expected to feed by inserting the bill into the mouths of flowers, though there appear to be no published descriptions to confirm this.

I watched a number of individuals feeding on the island of Praslin in October and November 1990 and the majority indeed fed in this way, but at least one female, and possibly others, also fed by piercing the perianth at the base of the tubular flowers on a bush in a hotel garden. These flowers, some 60 mm long, opened and remained on the plant only for one day so that early in the morning few or none of the flowers were pierced, but by late afternoon 90 per cent or more had been attacked. The perianth was comparatively thick and the sunbirds did not always succeed in piercing a hole at the first attempt. In the afternoon, when many flowers were pierced, sunbirds would return and apparently feed at already pierced blossoms. They were also seen feeding conventionally at these flowers by inserting the head and bill into the mouth of the trumpet. I also saw female sunbirds in the same garden twice apparently attempting to pierce the base of *Hibiscus* flowers, but without success, these being much tougher than the flowers that were pierced. On one of these occasions the female also fed in the conventional manner on another bloom in the same *Hibiscus* bush.

I thank Peter Colston for kindly measuring specimens in the British Museum.

The Briar Patch,
Limpsfield Chart,
Oxted,
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P. J. OLIVER

25 June 1991

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BOOKS RECEIVED

Marchant, S. & Higgins, P. J. (Co-ordinators) 1990. *Handbook of Australian, New Zealand & Antarctic Birds*. Volume 1 Ratites to Ducks (Part A Ratites to Petrels, Part B Australian Pelican to Ducks). Pp. 1400. 90 colour plates, many maps and text-figures. ISBN 0 19 553068 3. £125.00. 27 × 19 cm.

The first volume of a 5-volume handbook which, to quote the entirely justified statement on the dust-jacket, "is one of the most exciting and significant projects in Australasian ornithology today". The decision to undertake the project was made in 1980, with the original intention of covering Australia only (for which there was no recent comprehensive handbook); the subsequent spread of the geographical coverage to include New Zealand, Antarctica and the sub-Antarctic islands all round the world, is described in the Introduction, together with all the other details needed in presenting a work of this magnitude and complexity.

In general, the work closely follows the pattern set by *The Birds of the Western Palearctic*; it is acknowledged in the introduction that the appearance in 1977 of the first volume of *BWP* was an inspiration. The organization of the sections of text for each species in the two handbooks is very similar, but a few differences may be noted. Distribution and Population are dealt with in a single section, thus avoiding some of the partial repetition and overlap inherent in the separate sections in *BWP*. Social Organization and Social Behaviour are separate sections, thus splitting the Social Pattern and Behaviour section of *BWP*. This makes little practical difference, but the opportunity has been taken, here and in other sections, to help the reader find the way, through what is anyway a less massive text, by the judicious use of bold type and more generous spacing. The information given under Movements is in some cases supplemented by maps of ringing recoveries. The circular annual-cycle diagrams used in *BWP* are replaced by simpler linear diagrams which are easier to read, if a little less informative. A major difference is that the references are listed at the end of each species account. This greatly helps the reader, and also does away with the fearsome editorial task of coordinating all references at the end of the volume, from a huge number of texts from different contributors (who may, for instance, use 1978a, 1978b and 1978c inconsistently when referring to three papers by a prolific author). This was not really an option for *BWP*, with on average many more references for each species, as it would have involved a quite unacceptable amount of duplication and a great increase in the number of pages.

The 96 colour plates, all by J. N. Davies, are very good. They cover all the main plumages of all the species, and include birds perched in standard postures and in flight. This is an outstanding achievement, covering as it does a diversity of birds from emus, penguins and petrels to herons and ducks, all depicted with equal competence.

As volume 1 turned out to be so large, it was published as two parts; but unless there was some over-riding reason for keeping to the original numbering of volumes (which is not stated), it might have been easier for purposes of citation to have called them volumes 1 and 2. This is a very minor point. HANZAB, the suggested abbreviation of the title, will doubtless soon become as essential and familiar a reference for ornithologists in the Antipodes as *BWP* is in this country.

Roberts, T. J. 1991. *The Birds of Pakistan*. Vol. 1 Non-passerines. Pp. xli + 598. Colour plates, drawings and maps. Oxford University Press. ISBN 0 19 577404 3 (hardback). £40.00. 26 × 21 cm.

In this age of multi-editor, multi-author regional handbooks, this single-author two-volume handbook is a remarkable achievement. From many years of residence in Pakistan, the author is more familiar with its avifauna than any other living ornithologist. He has set out to present an account of the birds of Pakistan that will fill a gap in the growing array of handbooks covering the birds of the world (there has been no recent book on the birds of Pakistan, and the treatment is much more detailed than in the Ali & Ripley *Handbook of the Birds of India and Pakistan*) and at the same time will be an essential conservation tool for a developing country suffering the usual environmental problems.

A number of introductory chapters explain the treatment adopted in the species accounts, and deal with general topics such as ecological factors affecting bird distribution, bird migration in and through Pakistan, and the contribution of early ornithologists (the last containing interesting first-hand accounts of those whom the author knew). The bulk of the book consists of the species accounts. An immense amount of information is presented under standard headings: Description; Habitat, distribution and status; Habits; Breeding biology; Vocalizations). For most species there is an excellent, very clear distribution map. The sections on distribution and status, which are especially detailed, together with the maps will constitute a most valuable source of information for the future in a country where environmental changes are bound to be extensive and probably adverse. The section on breeding biology is also very full, making thorough use not only of the (often rather obscure) literature and the author's personal records but also of unpublished notes by earlier ornithologists such as K. Eates, "an avid egg collector" who gathered a mass of data on the breeding of birds in Sind from the early 1920s to the late 1940s.

The species are not fully illustrated, but 13 plates (9 in colour) by the author, excellently reproduced, depict various groups for which comparative illustrations are useful, such as raptors in flight, sandgrouse, cuckoos and owls; and there is a scattering of useful black and white drawings in the text. There are several good maps, and five pages of colour photographs of habitats. The book was printed, to a high standard, in Karachi. It will without doubt stand for many years as the definitive account of an avifauna—politically that of Pakistan, geographically that of the Indus valley—which up to now has not received the detailed, up-to-date treatment it deserves.

Perrins, C. M., Lebreton, J-D. & Hirons, G. J. M. (eds) 1991. *Bird Population Studies: relevance to conservation and management*. Pp. xiv + 683. Numerous text-figures. Oxford University Press. ISBN 0 19 857730 3. £50.00. 24 × 16 cm.

Twenty-five years after the publication of David Lack's *Population Studies of Birds*, the same publisher brings the subject up to date with a much larger, multi-author volume, whose subtitle is symptomatic of present needs, emphasizing that understanding how populations work is increasingly of practical as well as of theoretical importance. No single author could today satisfactorily digest and present such a diversity of studies by many people in many different countries.

Significantly, only one chapter, on 'Population limitation in birds of prey', is concerned primarily with what Lack took as the central question and theme of his book. Most of the 29 other chapters, by 42 different authors—whether dealing with groups of birds, single species, or bird populations in particular areas—are concerned more to evaluate and discuss in depth particular aspects of population biology, especially those relevant to conservation. Birds dealt with include, in addition to raptors and other groups of birds considered as a whole, the Great Tit, White Stork, Puffin, Greater Flamingo, Grey Partridge, Red Grouse, Common Tern, Herring and Lesser Black-backed Gull, Florida Scrub Jay and Northern Spotted Owl.

An excellent concluding chapter, by Ian Newton, in a sense comes full circle, returning to David Lack's main concern of the 1950s and 1960s. To quote: "Enormous effort has been devoted over the years to measuring the demographic parameters of bird populations, notably birth and death rates, to the considerable neglect of the external factors that ultimately determine population level. But while we study populations by demography alone, we will never understand what ultimately determines their average level, and why this level varies greatly between areas." This chapter is not only a useful survey of the book's contents, but could stand by itself as perhaps the best 16-page summary of our present understanding of bird populations for the interested non-specialist.

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Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

Olson

ISSN 0007-1595

Bulletin of the

British Ornithologists' Club

Edited by
Dr D. W. SNOW

Volume 111 No. 4 December 1991

FORTHCOMING MEETINGS

Tuesday, 21 January 1992. The Honorary Secretary, Mrs Amberley Moore will speak on **"Ornithology in the Search for the Course of the Niger".** Mrs Moore has a particular interest in West African ornithology having lived in the Cameroon Republic and in The Gambia for many years.

Those wishing to attend should notify the Hon. Secretary by Tuesday, 7 January 1992.*

Tuesday, 18 February 1992. Dr David Harper will speak on **"Why is Robin behaviour so variable?".** Dr Harper is a lecturer at the University of Sussex, and works on a variety of small birds.

Those wishing to attend should notify the Hon. Secretary by Tuesday, 4 February 1992.*

Tuesday, 7 April 1992. Dr Carlo Violani of the Università di Parvia, Milan, will speak on the 18th century Italian naturalist **Giovanni Antonio Scopoli** and his influence on Italian ornithology.

Those wishing to attend should notify the Hon. Secretary by Tuesday, 24 March 1992.*

Tuesday, 19 May 1992. Dr Michel Louette of the Musee Royal de l'Afrique Centrale, Tervuren, will speak on **"The Birds of The Comoro Islands".**

Tuesday, 9 June 1992. Brian Meadows will speak on the birds of **Central Hejaz, Western Arabia.**

Meetings are held in the Senior Common Room, Sherfield Building, Imperial College, London SW7 at 6.15 pm. for 7 pm. A plan showing Imperial College will be sent to members on request.

*Late acceptances and cancellations can usually be taken up to the Thursday morning preceding a meeting, although members are asked to accept by 14 days beforehand as arrangements for meetings have to be confirmed with Imperial College well in advance.

If you accept and subsequently find you are unable to attend please notify the Hon. Secretary, 1 Uppingham Road, Oakham, Rutland LE15 6JB (tel. 0572 722788) as soon as possible as the booking can often be offered to another member.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 111 No. 4 Published: 31 December 1991

The eight hundred and twelfth meeting of the Club took place in the Senior Common Room, Sherfield Building, Imperial College, London on Tuesday, 17 September 1991. 26 members and 15 guests attended.

Members present were: D. GRIFFIN (*Chairman of the meeting*), M. A. ADCOCK, Dr J. ASH, Miss H. BAKER, K. F. BETTON, Mrs D. M. BRADLEY, P. J. BULL, Dr R. CHEKE, J. H. ELGOOD, S. J. FARNSWORTH, G. D. FIELD, Rev. T. W. GLADWIN, C. A. R. HELM, Ms R. M. JONES, R. KETTLE, Dr J. F. MONK, A. G. MOORE, Mrs A. M. MOORE, R. G. MORGAN, R. E. SCOTT, Dr R. C. SELF, P. J. SELLAR, R. E. SHARLAND, N. H. F. STONE, Mrs F. E. WARR, K. P. WOOD.

Guests attending were: G. R. WELCH (*Speaker*), Mrs B. ADCOCK, Mrs J. ASH, Mrs J. BULL, Mrs F. FARNSWORTH, Mrs J. GLADWIN, Mrs S. GRIFFIN, Ms K. HOFF, P. J. MOORE, N. PEACE, R. RANFT, Mrs A. SCOTT, A. J. WARR, Mrs H. WELCH, Mrs J. M. WOOD.

After supper Mr G. R. Welch gave the address "Djibouti—Gateway to Africa". He described visits he has made to Djibouti undertaking projects to census raptor migration in 1985 and in 1987, and the need for more information on migration over Bab el Mandeb, particularly from the trans-Caspian region. He also described problems of developing reserves in Djibouti. His description of the country was illustrated with excellent colour slides, and his address was much appreciated by members.

A celebration will be held in London in 1992 to mark the Centenary of the Club. It is hoped that HRH the Duke of Edinburgh will honour the Club with his presence at a special dinner.

Arrangements for the dinner, which will not be held before the middle of October 1992, will be completed in July and details will be circulated to members at that time.

THE CHAIRMAN'S ADDRESS

(given at the meeting of the Club on 21 May 1991)

F. J. F. Barrington, Herbert Stevens—Benefactors of the Club

Last year I spoke to you on "Progress of the Club in the last 50 years" (*Bull. Brit. Orn. Cl.* 110: 114, 116–121). This year I shall say something on the two members whom we remember as benefactors of the Club, Frederick James Fitzmaurice Barrington and Herbert Stevens.

Frederick Barrington was born in 1883 or 1884 (from his age in the Register of Deaths). He qualified in medicine and surgery at University College Hospital in 1907. He specialized as a surgeon in genito-urinary diseases and had appointments at U.C.H. for the rest of his life. He is stated to have been at heart a scientist and performed valuable medical research.

He joined the B.O.U. and the Club in 1925. He was a very regular attendant at Club meetings, seldom missing more than one a year, except for the period between October 1940 and May 1945, when he was working at Colindale and only came to two meetings. He was a member of the Club Committee 1929–1932 and a Vice-Chairman 1943–1945. Search of the Zoological Record reveals no published work by him on birds, but he published two papers on the nervous mechanism of the bladder in medical journals and produced privately four brochures on the birds of Colindale. He died on 23 March 1956 and obituary notices appeared in *The Times, Ibis* and two medical journals. After his death the Club received £1000; his estate was £16,390 6*s* 6*d* gross.

Richard Meinertzhagen, who had retired from the Committee of the Club in April 1956 at the end of his term of office as Chairman, lobbied the Committee vigorously to tie up that money in trust in such a way that the capital could not be got at. This has almost passed into the folk-lore of the Club and, according to Mrs Pat Hall, who was a member of the Committee at the time, he said that he would leave nothing to the Club if the Barrington capital was not so put in trust. The Committee announced in 1957 that action was being taken to do so and the necessary resolutions were passed in February 1958—but there was no bequest by Meinertzhagen when he died some 10 years after. I shall return to this later.

Now to Herbert Stevens. My earliest information on him was anecdotal, to the effect that he was a collector for the Rothschild Zoological Museum and that the house at Tring in which he lived was a "Rothschild house", meaning that it had been built by a Rothschild and conveyed to him wholly or in part in return for his services.

We know that he joined the British Ornithologists' Union in 1910 and the Club in 1924, and retained his membership of both for the rest of his life. So far as I can trace, there have been no obituaries of him published—as regards the B.O.U. that is not surprising, seeing that it was still showing him as a Member some months after he had died and never did include his name in any list of deceased Members.

I then turned to his Will, a document well known to all Honorary Secretaries of the Club in the last 27 years and made on 27 May 1957. The Will is a remarkable document of eight sheets of foolscap plus a Codicil of two similar sheets, all closely written in manuscript by Stevens himself, without any legal imperfections and, moreover, providing shrewdly for those he wished to benefit. In it he bequeathed his home at Tring to the Club, subject to a trust period of 21 years, in which the Club had to use it for its own purposes or let it to a Member as a furnished house (which at that time meant that it would not be a statutory tenancy). Among his other bequests were his Oriental and Palaearctic birds and lepidoptera to the Natural History Society of Northumberland, Durham and Newcastle-upon-Tyne, his insects other than lepidoptera to the "Manchester Museum" of the University of Manchester and his Indian birds' nests and eggs to the British Museum (Natural History). The residue went predominantly to societies for the prevention or relief of animal suffering. His Will also disclosed that he was a widower, his wife's name was Amy, and that there were trees and bulbs in the garden of the house which he commended as a memorial to her. Probate of his Will showed that he died on 1 June 1964 and left £56,668 19*s* net, of which the Government had helped itself to £20,118 19*s* in Estate Duty.

The next resort was the title deeds of his home. These revealed that the land passed in 1884 from the Dean and Chapter of the Cathedral Church of Christ in Oxford to J. G. Williams of Pendley Manor, near Tring. In 1907 it was conveyed as a building plot of 1 rood, 19 perches for £120 to a plumber and decorator, William Figg; in 1920 as a house, already known as "Clovelly", and land to a postman, T. G. Randall, for £850; and in 1921 to one Jabez Pratt, who described himself as "gentleman", for £775. Finally it was bought on 12 April 1922 by Herbert Stevens, tea planter, for £1000. In summary, no Rothschild connexion to be seen anywhere!

I am much indebted to Mrs F. E. Warr, librarian of the British Museum (Natural History) at Tring, for much assistance which she has given me. Thus, as regards the Museum, she has told me that it has 1534 clutches of eggs from Stevens' collection and a substantial number of birds' nests; also that the insects received from him by the Museum and held at Cromwell Road had been thought to be duplicates, in view of their condition, as was the case with the insects received from him by the Manchester Museum. In addition, she mentioned that the Hancock Museum at Newcastle-upon-Tyne had much material that had come from Stevens. I must thank also David Calder, Reverend Geoffrey McCulloch and the Honorary Treasurer for sending me relevant papers, and Dr David L. Harrison for access to the library of the Harrison Zoological Museum.

Peter Davis of the Hancock Museum has sent me a list of what they received by virtue of the bequest to the Northumberland, Durham and Newcastle-upon-Tyne Natural History Society. The items include a total of 4141 bird skins, of which they sent me a 72-page inventory that I intend to deposit at the Museum at Tring. It does not include any type specimens and does not consist solely of specimens collected by Stevens himself, so is of limited value for biographical purposes. In addition to material of doubtful value to me, there was the typescript of about 13,000 words by Stevens of the narrative of a collecting expedition by Herbert and his wife Amy to Tonkin in 1923–1924. So far as I can trace, this has not been published *in extenso* but a much condensed version appeared as "Account of the Journey by Mr H. Stevens" at pp. 108–113 of the paper entitled On the birds collected by Mr H. Stevens in Northern Tonkin in 1923–24 (N.B. Kinnear (with Notes by the Collector), *Ibis* 1929: 107–150, 292–344).

I then searched at the General Register Office, the Science Reference Library and the Probate Registry, all in London and, fortunately, close together, and I am grateful for the facilities made available. It soon became apparent at the General Register Office that Herbert Stevens was too common a name for him to be traced without other information, and the same applied to Amy Stevens. However I did ascertain that he was shown in the register as 87 years old when he died. The trees in the garden of "Clovelly" dedicated to the memory of Amy were estimated to have been 12 to 20 years old in 1964 and it was a long time before I discovered that it was on 20 February 1956 that she died, her age then being given as 75 years. She left £5850 14*s* 1*d* net, all to Herbert. It is not clear when Herbert and Amy married but, from messages and addresses on picture postcards, it was probably in Bengal, fairly soon after she and her sister arrived there from England in January 1920.

A visit last month to "Clovelly" with the Honorary Secretary and the Vice-Chairman produced albums of postcards, photographs and other documents which have helped materially in building up the story of his life. In analysing these it became clear that Herbert had a brother Horace, so H. Stevens did not necessarily stand for Herbert Stevens; also there was a Henry Stevens (but nothing to suggest that he was Henry Stevens the auctioneer, to whom I shall refer later). I do not know the origins of Herbert's interest in scientific ornithology but he became a member of the Northumberland, Durham and Newcastle-upon-Tyne Natural History Society in 1900–1901, which was only just before he went to India.

Search of Comprehensive, Insecta, Aves and Mammalia sections of the Zoological Record 1895–1965 disclosed the publication of one book and four other works by Herbert Stevens. He had two lengthy papers published in India, Notes on the birds of Upper Assam (*J. Bombay Nat. Hist. Soc.* 23 (1914–1915): 234–268, 547–570, 721–736) and Notes on the birds of the Sikkim Himalayas (*J. Bombay Nat. Hist. Soc.* (1923–1925) 29: 503–518, 723–740, 1007–1030; 30: 54–71, 352–379, 664–685, 872–893). His addresses to the Club were also printed, namely Account of a recent trip in Western China (*Bull. Brit. Orn. Cl.* 50 (1930): 46–54), and An account of a journey to the Himalaya during the cold season of 1930–1931 (*Bull. Brit. Orn. Cl.* 52 (1931): 13–18). There is, in addition, a geographical paper by him, Sketches of the Tatsienlu peaks (*Geogr. J.* 75 (1930): 353–356). Furthermore, Stevens was the author of the section "Narrative" at pp. 19–24 of Birds from the coastal range between the Markham and the Warla rivers, northeastern New Guinea (J. C. Greenway, Jr, *Proc. New England Zool. Cl.* 14 (1935): 15–106). His book, which is his only work in the catalogue of the British Library, is *Through deep defiles to Tibetan uplands: The travels of a naturalist from the Irrawaddy to the Yangtse* (1934, London, H. F. & G. Witherby). A bound copy of page proofs of it (without the map) came to the Club with "Clovelly" and is in the Balfour Library of the B.O.U. at the Linnaean Society, where it may be consulted. From that copy and drafts it appears that the phraseology and punctuation of Stevens' text were much revised, maybe by the publisher. The proof copy contains a vast number of marginal proof corrections by Stevens, almost all in respect of punctuation, but few of them were incorporated in the published work.

Peters' *Check-list of Birds of the World* (1934–1989) was a useful source of bird forms named after Herbert or Amy Stevens and these were helpful in showing where they had been and when. There have been seven subspecies named *stevensi* after Herbert (of which two have disappeared into the synonomy) and two *amyae* after her. In the cases of *Acrocephalus concinens stevensi* and *A. stentoreus amyae* the holotypes are stated (*Bull. Brit. Orn. Cl.* 43 (1922): 16–17) to be "Stevens coll." but they were deposited in the British Museum (Natural History) the same year.

The Bulletin also proved useful. The lists of those attending meetings showed H. Stevens from 1894. This aroused my suspicions; he appeared to be the guest always of E. Bidwell, whose particular interest was in the Great Auk. On his eleventh visit he was referred to as Henry Stevens and later Bidwell exhibited a Great Auk sent to Stevens for sale, so he was clearly the Henry Stevens who presided over J. C. Stevens, the auctioneers well known to ornithologists for their sales of collections of birds and their eggs. It would be interesting to know if there is any evidence of Herbert having been related to the Stevens of the firm of auctioneers. However the H. Stevens that concerns us tonight attended 23 meetings of the Club within the period November 1922–October 1931 and after that only on one occasion, in March 1934. (The names of those attending meetings were, unfortunately, not published from April 1951, so there is just the possibility that he might have come again after that date.) On two occasions he spoke on his trips abroad and, as mentioned earlier, the reports of those addresses comprise two of his published works. The annual Chairman's Address provided news of some of his travels, sometimes the only obvious source of such information.

In his Notes on the birds of the Sikkim Himalayas Stevens thanked Lord Rothschild and the British Museum Authorities equally for access to their collections and for the help of their senior staff, but that was the only paper in which he acknowledged either of them. Except for type specimens, he appears to have retained in his lifetime (or exchanged with other ornithologists) the bird skins he collected from 1901 to August 1923. His subsequent trips east of Suez were apparently all by arrangement with museums, and the specimens collected would presumably all have gone to the relevant museums—which did not include that of Lord Rothschild. The idea that he collected for the Rothschild museum seems therefore to be completely devoid of foundation.

Stevens was collecting and recording birds during his life as a tea planter. He was stationed in Lakhimpur district of Upper Assam from about March 1901 to late 1911. He was then employed in the Darjeeling area (mostly or wholly at Gopaldhara, Kurseong) from December 1911 to June 1912, December 1913 to about late January 1922, and from about April to 3 September 1923. He was on furlough for five months in the cold season of 1905–1906 over the frontier in the hill country northwest of Upper Assam and from April to November 1909, when he went to England. He was next home on furlough from June 1912 to December 1913; S. L. Whymper, newly retired from India, was then planning a collecting expedition with Stevens to Kuaremandro, a place in northern Lapland, to be on the ground by late April 1913. Stevens met his future wife, Amy, on that furlough and may well have first made her acquaintance earlier.

Herbert and Amy left Darjeeling on 3 September 1923 for Tonkin, where they arrived on 8 October at Haiphong, their tour ending there on 6 August 1924. They had a narrow escape from drowning when a river steamer in which they were travelling capsized with 26 deaths; fortunately for science he had consigned home all the specimens which he had already collected. Their primary objective was to obtain mammals (described by Oldfield Thomas in *Proc. Zool. Soc. London* 1925 (1): 495–506). They collected for the British Museum (Natural History) under the auspices of the Percy Sladen and Godman exploration funds and brought back about 200 mammals, 333 birds, over 170 birds' eggs, 292 reptiles and amphibians, 14 fishes and 2640 insects.

He is next heard of as a member of the Kelley-Roosevelts expedition to W. China for the Field Museum, Chicago, of which the other members were Theodore and Kermit Roosevelt, S. Cutting and J. Young. They left Bhamo in E. Burma on 26 December 1928 but, as previously arranged, soon separated so that they could collect more conveniently, and Stevens eventually reached Shanghai on 6 November 1929, having collected about 500 mammals, 1150 birds, 5000 butterflies and several hundred reptiles, amphibians and fishes, as well as flies, fleas, and flowering plants and shrubs. He reached England via Chicago in late December.

His next trip was to the Sikkim Himalaya, reaching Cooch Behar by 8 October 1930 and leaving the area for Calcutta on 4 May 1931. The bird skins which he collected (and presumably his other specimens) went to the Field Museum, Chicago.

Stevens' last known expedition—and his longest—was to New Guinea. He reached Salamaua, on the northeast coast, not later than 24 January 1932, flew inland to Wau, collected in various places around there and struck his last camp on 5 May 1933. He was collecting for the Museum of Comparative Zoology, Harvard University, on this occasion, his collection comprising 1308 bird skins of 207 forms.

After that, little is recorded of his interests in zoology. On 14 March 1934 he attended a Club meeting for the last known time, in 1945 he drafted a review of a work on the birds of the Darjeeling area and in the three following years he was trying to sell some or all of his collection of butterflies.

I conclude with two points. Firstly, you may remember that, following Richard Meinertzhagen's lobbying, the Club Committee decided to put the money from Barrington into the hands of trustees. However, Richard Meinertzhagen was not the only fish in the ocean. The Committee announced in the Annual Report for 1956, approved at the Annual General Meeting on 16 April 1957, that it was taking legal advice for the creation of an endowment fund to take over the Barrington money, and any future bequests. It was just seven weeks later that Herbert Stevens made his Will leaving "Clovelly" to the Club, and we have found together in his papers four numbers of the *Bulletin* covering the period of publication and approval of the Trust Deed, marked by him in two places.

Secondly, Stuart Baker wrote "In Sikkim Stevens has done a great deal of excellent work, though still too much of it remains unrecorded and locked in his brain" (*The Nidification of Birds of the Indian Empire* Vol. 1, p. xv, London). I am afraid that is as valid now as it was when published in 1932.

Ronald E. F. Peal

A first record of *Pterodroma feae* from the Azores

by Colin J. Bibby & Adrian J. del Nevo

Received 23 December 1990

The classification of gadfly petrels allied to the Soft-plumaged Petrel *Pterodroma mollis* has been the subject of considerable uncertainty. Two northern forms are very rare and their future status is a matter of concern (Collar & Stuart 1985). *P. (mollis) madeira* is known from a single colony on mainland Madeira where a few dozen pairs have recently been recorded (Zino & Zino 1986). *P. (mollis) feae* is known from Bugio in the Deserta group near Madeira and from four islands in the Cape Verde archipelago with a known world population of a few hundred pairs (de Naurois 1969, Zino & Zino 1986). Wailing calls suggested to be one of these birds were also heard over Great Salvage Island on the nights of 19 and 20 June 1983 (James & Robertson 1985). Both forms are listed in the Red Data Book, respectively as endangered and rare (Collar & Stuart 1985). The nominate form is widely distributed in the southern ocean.

Bourne (1983) has abandoned his previous (1957) taxonomic caution and suggested that the three races should be regarded as separate species. This view has been supported by Imber (1985). Cape Verde and Bugio birds do not appear to differ sufficiently to justify previous subspecific separation. Although the two northern species nest within about 30 km of each other in Madeira, they differ considerably in size and timing of breeding (Zino & Zino 1986). Which of the two northern species is most like *P. m. mollis* of the southern ocean is unclear as is the question of their relationship to the Bermuda Petrel *P. cahow* (Murphy & Mowbray 1951, Bourne 1966). The Bermuda Petrel is also very rare but has received rather more conservation attention (Lever 1984). A missing *Pterodroma* on the Azores has long been predicted (Bourne 1965) and could form a link between *P. feae* and *P. cahow*. If found, its appearance could contribute to the resolution of such taxonomic questions.

Some ambiguity surrounds the vernacular names given to these birds. For *P. feae*, Bourne suggested that the name Gon-gon by which the Cape Verde birds are said to be known locally is an onomatopoeia. It seems hard to believe that the wailing calls recorded by Zino on Bugio could be rendered as anything like 'gon-gon', but perhaps the burrow call has yet to be recorded. When it was proposed as a separate species, Bourne suggested that *P. madeira* should take the vernacular name of Freira by which both species have long been known locally in Madeira. Madeiran ornithologists distinguish the two species in the vernacular by location in their islands (Bugio freira and Madeira freira), which is not very satisfactory as *P. feae* also occurs at Cape Verde. *P. feae* could more simply be known as Fea's Petrel after the collector of the first described specimen from Cape Verde. This name was used by Bannerman & Bannerman (1966). Until the taxonomy of the group is clarified the most widely published names, Gon-gon and Freira, are the least ambiguous.

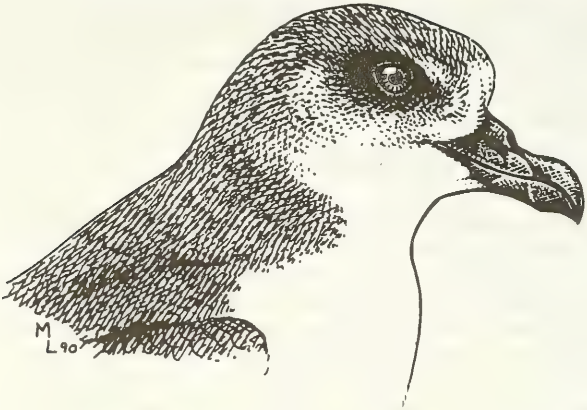

Figure 1. *Pterodroma* caught on the Azores, 28 June 1990. Drawn by M. Langman from a photograph.

Observations

In conjunction with the Universidade dos Azores and as part of a long-term involvement in the study and conservation of Azorean seabirds, we made a number of visits to off-shore stacks and islets, to investigate the status of breeding seabirds. Where possible an overnight stay was made and mist nets were used to catch, ring and record biometrics of nocturnal seabirds. Trapping and recapture took place on several nights in an attempt to establish initial population estimates. During one of these sessions, we caught a gadfly petrel shortly after midnight on 28 June 1990.

The bird was broadly white below and grey-brown above with a much paler dove-grey tail. The dark grey to black surrounding the eye, the steep white forehead, mottled with grey, and the large heavy bill were prominent features (Fig. 1). The flanks were white, lightly mottled with grey. A collar of slightly darker grey than the mantle extended some 5–10 mm onto the foreneck/upper breast. The axilliaries were pure white with some grey flecking at the tips of the feathers. The lesser underwing coverts were pale brown and contrasted with the darker edges of the rest of the underwing. The underwing pattern was probably not sufficiently clear as to show markedly in the field.

The Madeira and Bugio birds are not yet known to differ in any plumage features although the latter appears to be rather more mottled on the flanks. Our bird matched descriptions and photographs of these two species without obvious exception. It had no suggestion of the white rump of either the Bermuda Petrel or Black-capped Petrel *P. hasitata* nor of such bold underwing pattern as illustrated by Harrison (1983). It lacked the dark breast band of the typical form of Soft-plumaged Petrel *P. m. mollis*.

Critical measurements compared with means from Bugio and Madeira (Zino & Zino 1986), Cape Verde (Jouanin *et al.* 1969) and the type specimen of *P. cahow* (Nichols & Mowbray 1916) measured by Bourne (*in litt.*) thus:

	Azores 1990	Bugio *P. feae*	Cape Verde *P. feae*	Madeira *P. madeira*	Bermuda *P. cahow*
Weight (g)	325	311		204	
Wing-length (mm)	270	268	266	247	260
Tarsus (mm)	35.6	35.8	34.6	32.9	36
Mid toe (mm)	45.0	46.4	46.1	42.5	51
Tail (mm)	128	110	105	104	124
Bill-length (mm)	29.7	29.1	28.6	25.0	30

The two eastern Atlantic species are readily separated on size. Our bird was clearly similar to that found on Bugio. In all cases, our measurements fell within the given range for *feae* and, with the exception of tarsus, exceeded the range of *madeira*. The range for tail-length of *feae* given by Zino & Zino seems excessively large. The standard deviation from 6 measurements is given as 2.66 (Cramp & Simmons 1977), so in this respect our bird was closer to *P. cahow* and significantly longer-tailed than *feae*.

The bird had a moderately well developed brood patch and the pink inner third of the foot webs was markedly vascularised. This evidence is not sufficient to prove that our bird was breeding on the island, but since its breeding season would be expected to be rather later (as on Bugio) it is an early date for a pre-breeding immature to be ashore with a brood patch.

Although we did not at the time know the calls of this species, we did not hear any unexpected noises to indicate their presence. This was perhaps unsurprising since there were some 10,000 Cory's Shearwaters *Calonectris diomedea* inshore at dusk and their calls were overwhelming. Even the very recognisable calls of Madeiran Storm-petrel *Oceanodroma castro* were difficult to pick out. A second visit to the island produced no further records nor did 20 nights on 5 other seabird islets. *P. feae* breeds in the late summer on Bugio, and in winter at Cape Verde (Bourne 1955), so our visits, which did not continue beyond July, might have been too early to make a small breeding colony obvious.

Conclusion

We have described the first record of the previously predicted occurrence of a gadfly petrel on the Azores. In measurements, it was close to *Pterodroma feae* but with a longer tail more like that of *P. cahow*. In appearance it was similar to *P. feae* from Bugio. W. R. P. Bourne (*in litt.*) suggests that the longer tail and unexpectedly early date for *P. feae* to be ashore with a brood patch may make this the predicted link between *feae* and *cahow*, which should perhaps be classified as a single species.

Fuller consideration of the taxonomy of these birds is required. Attention could be given to voice, parasites and gut morphology (Imber 1985). *P. madeira* and *P. cahow* apparently share a previously undescribed species of *Halipeurus* louse (B. Zonfrillo, *in litt.*). We intend to return to the Azores to attempt to learn more of the status of this bird and collect further information.

We did not prove that this bird breeds in the Azores but it seems quite likely that this is the case. The rocky island with an earth cap fits with the description of the nesting area on Bugio. It can be observed that there is much further exploration to be done in the Azores. Some of the precipitous mountains are still well vegetated and resemble the nesting habitat of *P. madeira* on the Madeiran mainland.

The tiny population of *P. madeira* on Madeira has suffered illegal collection in recent years and eggs have been stolen from Funchal museum. For this reason we have decided not to publish an exact locality for this record until we can ascertain the numbers (if any) breeding in the Azores.

If either species nests on the Azores, this would be a strengthening of their conservation status. We can only endorse Bourne's (1983) observation that they remain sadly neglected compared with the much supported Bermuda Petrel (Lever 1984), though a programme of rat poisoning has recently begun on Madeira (Buckle & Zino 1989).

Acknowledgements

We are grateful to W. R. P. Bourne, E. Dunn and B. Zonfrillo for their very helpful discussions and contributions to a previous draft of this note. We thank M. Langman for drawing Figure 1.

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A new subspecies of Grey-cheeked Nunlet *Nonnula ruficapilla* from Brazilian Amazonia

by Fernando C. Novaes

Received 31 January 1991

According to Meyer de Schauensee (1966) the geographical distribution of *Nonnula ruficapilla* includes Colombia (from the northern Pacific coast east through the Caribbean lowlands to Santa Marta and the middle Magdalena valley), eastern Peru (Río Napo south to the Marcapata valley) and Brazilian Amazonia (Juruá, upper Guaporé and upper Paraguay rivers). More recent records have extended the Brazilian range far to east to the Tocantins river valley. Here, I follow Wetmore (1988), who restricts the geographical range of *N. ruficapilla* to Peru and Brazilian Amazonia. *N. frontalis* from Colombia is believed to be a distinct species.

According to Peters (1948) there are three recognizable subspecies of *N. ruficapilla*: *N. r. rufipectus* (Río Napo, Peru), *N. r. ruficapilla* (Juruá, Huallaga, Ucayali rivers) and *N. r. nattereri* (Rio Guaporé and upper Paraguay). These subspecies have been based on geographical variation in colour pattern. *N. r. rufipectus* is richly and darkly coloured on both upper and under parts, while *N. r. ruficapilla* is lighter and *N. r. nattereri* is the lightest in colour. Eastwards from the Xingu river basin, *nattereri* gradually becomes duller in colour, reaching its dullest form in the Tocantins river basin. This variation separates the Tocantins form, which may be known by the following name, from all other geographical forms of *N. ruficapilla*. Capitalized colour names with numbers indicate direct comparison with Smithe's (1975, 1981) *Naturalist's Color Guide*.

Nonnula ruficapilla inundata subsp. nov.

Type. MG 36.071; female; Pará, rio Tocantins, left bank, 12 km south of Jacundá (town), 04°35′S, 49°34′W; 12 May 1984, collected during a Goeldi Museum expedition.

Diagnosis. Differs from *N. r. nattereri*, the nearest geographical form, by having the throat and breast Amber (36) instead of Yellow Ochre (123 C); upper parts (back and tail) more olivaceous nearly Olive Brown (28) instead of Raw Umber (123), belly darker, washed with yellowish Buff Yellow (53) whereas in *nattereri* this is closest to Cream Colour (54); sides of head, neck and body dark greyish, Medium Neutral Grey (84) instead of Light Neutral Grey (85). Differs from *N. r. ruficapilla* chiefly in the dark colour of the throat and breast Amber (36) instead of Clay Colour (123 B).

Distribution. Known only from the type locality.

Measurements and colour of soft parts. Exposed culmen 23.2; culmen from nostril 19.3; culmen from base 27.3; wing 69; tail 63.7; tarsus 11.8 mm. Iris brown; circum-orbital skin pale red; maxilla black, base bluish-grey; mandible bluish-grey with black tip; weight 16.5 g.

Remarks. The specimens studied show that *N. r. nattereri* is not restricted to the Guaporé basin and upper Paraguay river, but that its distribution extends eastwards as far as the Xingu and Tapajós river basins. The birds from the Tapajós and Xingu basins are not as pale as those from the Guaporé and Paraguay, however, although there is a gradual rather than an abrupt colour change, suggesting intra-subspecific variation within *nattereri* rather than an intermediate between *nattereri* and *inundata*.

Specimens examined

N. r. ruficapilla. **Amazonas,** rio Javari, Estirão do Ecuador, 1 female, 1 female (MN), rio Juruá, 1 female (MZUSP). **Rondônia,** rio Jiparanã, cachoeira Nazaré, 1 female.

N. r. nattereri, **Mato Grosso,** São Luiz de Cáceres, 1 male juv. (MZUSP), Salto do Sepotuba (rio Sepotuba), 1 (sex ?) (MN), Baixo rio Kuluene, Jacaré (12°53′S, 52°50′W), 2 males (MN), 2 females (MN), alto rio Xingú, Diauarum (11°25′S, 53°15′W), 1 female (MN), rio Sete de Setembro, Garapú (12°00′S, 52°37′W), 1 male (MN), 1 female (MZUSP), rio Peixoto de Azevedo, Fazenda São José (10°10′S, 54°50′W), 1 female. **Pará,** Rio Tapajós, Lago Araipá, 1 female (MZUSP), Rio Tapajós, Fordlandia, 1 male (MZUSP).

N. r. inundata, **Pará,** Rio Tocantins (left bank), 12 km, south of Jacundá (Type), 1 female.

Acknowledgements

I am indebted to the curators of the following collections for the examination of specimens: Museu de Zoologia da Universidade de São Paulo (MZUSP) and Museu Nacional, Rio de Janeiro (MN); and to Dr Stephen Ferrari for help with the revision of the English text.

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First record of the Shy Albatross *Diomedea cauta* for the Brazilian coast

by Maria V. Petry, Glayson A. Bencke & Gilmar N. Klein

Received 31 January 1991

The Shy Albatross *Diomedea cauta* is widespread in southern oceans, occurring only accidentally in the northern hemisphere (west coast of North America and Red Sea, *D. c. cauta*). The post-breeding range of the species comprises the eastern and western coasts of South America. There are records off the west coast of *D. c. salvini* up to 5°S and of *D. c. cauta* up to 23°S, and off the east coast of *D. c. cauta* nearly up to 35°S (Harrison 1987). This species has not been cited for the Brazilian coast by Pinto (1978) nor by Sick (1986). *D. c. cauta* breeds in the Bass Strait, southern Tasmania and Auckland Is. (August to April); *D. c. salvini* at Bounty and Snares Is. (August to April); and *D. c. eremita*, still not recorded from the American Continent, at Chatham Is. (Harrison 1987).

The Brazilian specimen, a young female, was found dead ashore near São Simão Village (30°55′S, 50°45′W), Mostardas District, Rio Grande do Sul State, in April 1990. It was in good condition and had the following measurements: wingspan 2370 mm, wing 580 mm, tarsus 95.7 mm, culmen 129 mm, depth of bill at base 49.2 mm.

The specific status was determined both by plumage pattern and bill shape (Dabbene 1926, Murphy 1936, Harrison 1983, 1987), but the subspecies could not be determined for certain, as the juveniles of both subspecies occurring in South America are very similar. The underwing pattern of the Brazilian specimen resembles that described for *D. c. salvini* by Harrison (1983, 1987) and Harper & Kinsky (1978), but a comparison of skins would be essential.

The bird did not show any fat deposition, and the stomach contents consisted only of one otolith of *Porichthys porosissimus* (Batrachoididae), a nocturnal fish with photophores.

The specimen is now in the collection of the Museu Nacional, Rio de Janeiro, Brazil, under the number MN36922.

Acknowledgements

The authors wish to thank Martin Sander and Francisco J. M. de Freitas Lima (UNISINOS) who provided, respectively, some of the references and the identification of the otolith.

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Notes on a hitherto unknown specimen of *Neolesbia nehrkorni* (Berlepsch, 1887; Trochilidae) with a discussion of the hybrid origin of this 'species'

by Christoph Hinkelmann, Bernd Nicolai &
Robert W. Dickerman

Received 4 February 1991

In 1887, Berlepsch reported on a magnificent ("überaus prächtiges") specimen of hummingbird that his friend Adolph Nehrkorn from Riddagshausen (near Braunschweig, Germany) had recently received in a collection of about 200 skins from 'Bogotá' (Colombia; see Chapman 1917: 14). He described it as a new species, *Cyanolesbia nehrkorni*, in a publication treating hummingbirds from Bogotá collections (Berlepsch 1887a). Later he provided a detailed description of *Cyanolesbia nehrkorni*, and added a colour plate (Berlepsch 1887b). However, in both papers he offered doubts concerning the generic affinity of the new species because it differed distinctly from the other two species of the genus, which are now treated as *Aglaiocercus kingi* and *A. coelestis* (e.g. Wolters 1975–82, Hilty & Brown 1986). Subsequently, Salvin (1892) placed it in a monotypic genus, *Neolesbia*.

Neolesbia nehrkorni is a medium-sized hummingbird with a predominantly blue plumage. The bill is slightly decurved and of about the same length as the head. The tail is long and deeply forked, the rectrices blue with a violet sheen. There are some greenish-blue feathers in the head, neck and back. Forehead and crown are lighter blue-coloured than the general plumage.

Specimens

Whereas Berlepsch (1887a, 1887b) mentioned a unique adult male that he had in his private collection, Salvin (1892) stated that the species is "known from two specimens. That submitted to me is of the usual Bogota make, and was sent to Count Berlepsch by Mr Nehrkorn, who possesses the second specimen." Simon (1921: 306) indicated that only a single specimen is known, whereas Berlioz & Jouanin (1944) added that according to Salvin (1892) there may be a second individual. Peters (1945: 49) also mentioned two specimens.

While preparing a list of the Colombian bird species, Meyer de Schauensee (1947) cited two specimens that had not been mentioned previously. Both are from 'Bogotá' and still exist in the collections of the American Museum of Natural History, New York (AMNH no. 484177, ad. [?] ♂), and the Academy of Natural Sciences of Philadelphia (ANSP no. 159261 [ad. ♂]).

The type specimen is apparently lost. Berlepsch's collection was acquired by the Forschungsinstitut Senckenberg at Frankfurt/Main, but the *Neolesbia* specimen is missing today and there is no indication what happened to it (D. S. Peters, pers. comm.). J. Steinbacher (*in litt.*) added that the Frankfurt collection suffered some losses during the last war and that the type of *Neolesbia nehrkorni* might have been sent to the Museum für Naturkunde der Humboldt-Universität zu Berlin, but the specimen is not there at present. Many small bird skins were lost during the last war (G. Mauersberger, pers. comm.). Today it appears impossible to determine whether, as stated in Salvin's (1892) note, a second specimen once existed in the Nehrkorn collection or not. In Nehrkorn's handwritten catalogue (now in the Staatliches Naturhistorisches Museum Braunschweig), species no. 145 in the hummingbird section is recorded as "Neolesbia nehrkorni, Berl. ♂ Bogota", no. 1850 of his collection. No date is given and we are not able to determine if this specimen was the one given to Berlepsch (and perhaps sent back to Nehrkorn after 1887?) or was the second specimen mentioned by Salvin (1892). The Nehrkorn skin collection was later acquired by the Braunschweig museum but there is no *Neolesbia* specimen there today.

Fortunately, we were able to discover another, hitherto unpublished specimen of *Neolesbia nehrkorni* in the collection of the Museum Heineanum Halberstadt (MHH no. I 6843 A1, ad. ♂). The label indicates "Colombia: Sta. Fé de Bogotá (v. [=from] W. Gehlsen, Barranquilla). Sammlung (=collection) R. H. Jung." Jung, a private collector of Jena, had received the specimen in 1924 from A. L. Butler who probably obtained it (directly?) from W. Gehlsen. In 1936, the Museum Heineanum Halberstadt purchased the Jung collection. Although an additional new MHH label indicates "Sammlung Schlüter", this famous merchant of natural history specimens of Halle/Saale never owned this bird. Thus, there exist no more than 4 (or 5?) specimens of *Neolesbia nehrkorni*, all males.

Among the specimens of *Neolesbia nehrkorni*, there is some variation in both colouration and measurements (Table 1). Meyer de Schauensee (1947) reported on differences between the description of the type specimen (Berlepsch 1887b) and the specimen in the Academy of Natural Sciences of Philadelphia (shape and colour of the crown patch, size and colour of the throat patch, breast and belly colours, feathering of the tarsi, and shape and length of the bill) as well as between that and the specimen in the American Museum of Natural History (shape and colour of the throat patch, colour of the crown, and shape and length of the bill). Meyer de Schauensee (1947) emphasized some slight colour differences between the description of the type specimen (Berlepsch 1887b) and the accompanying colour plate (tail, back, crown, throat and underparts). The specimen in the Museum Heineanum Halberstadt (MHH) more

TABLE 1

Measurements (mm) of male specimens of *Neolesbia nehrkorni* (furca = difference between longest and shortest pairs of rectrices; * = moult of rectrices)

Specimen	Bill	Wing	Outer rectrices	Inner rectrices	Furca	Reference
Type specimen	19.25	63.5	67.5	27	40.5	Berlepsch 1887a, 1887b
MHH I 6843 A1	19	64	66.5	25.5	41	—
AMNH 484177	17	61.5	*	*	*	Meyer de Schauensee 1947
ANSP 159261	15.5	67.5	65	29	36	Meyer de Schauensee 1947

closely resembles the description of the type specimen. A "greenish mixture" is missing in the crown patch as well as in the lower back and most of the underparts, "a kind of broad golden breast band" is lacking but there is some greenish colouration in the breast, and the outer tail feathers are as violet-blue as the remaining pairs. There is no indication of tarsal feathers. The measurements of the MHH specimen are very similar to those of the type specimen. With the exception of these slight differences, the MHH specimen matches Berlepsch's description. Measurements of the specimens are presented in Table 1.

Neolesbia nehrkorni was considered to be an extremely rare though valid species. It might be regarded as an extremely rare or already extinct valid species, an unknown plumage variation of a well-known hummingbird species, or a hybrid. We favour the last of these, and provide arguments to corroborate our assumption.

Hybrid origin

Berlepsch (1887a, 1887b) considered *Neolesbia nehrkorni* to be perfectly valid ("ausgezeichnete neue Species") and several subsequent authors (Salvin 1892, Boucard 1895, Hartert 1900, Cory 1918, Peters 1945) saw no reason to doubt it. However, probably influenced by the existence of only a single specimen in collections, Simon (1921: 85) stated that he would not be surprised if this bird turned out to be a hybrid between *Lesbia* and *Thalurania*, but he did not provide reasons for this speculation. Later authors adopted the possible hybrid origin of *Neolesbia nehrkorni* and offered several species pairs as possible parents (Table 2). Meyer de Schauensee (1947), however, was "inclined to doubt the hybrid origin of *Neolesbia*; it somehow does not have the 'look' of a hybrid". Later, Meyer de Schauensee (1948–52, 1966) offered two different possibilities of hybrid origin (Table 2), and *Neolesbia* fell into oblivion.

Our attempts to determine the real identity of *Neolesbia nehrkorni* are based on the examination of two specimens (AMNH no. 484177, R.W.D.; MHH no. I 6843 A1, C.H. and B.N.), literature descriptions (Berlepsch 1887a, 1887b, Salvin 1892, Hartert 1900, Meyer de Schauensee 1947), and comparison with all species of hummingbirds found in Colombia (based on the compilation of Hilty & Brown 1986). In particular, we

TABLE 2

Possible parent species of the hybrid hummingbird *Neolesbia nehrkorni* according to several authors. With the exception of Hinkelmann, Nicolai & Dickerman, these opinions are not supported by morphological character analyses

Lesbia sp. × *Thalurania* sp.	Simon 1921, Berlioz 1927, 1929, Gray 1958
Thalurania sp. × *Cyanolesbia* [= *Aglaiocercus*] *kingi*	Berlioz & Jouanin 1944
Thalurania nigrofasciata × *Aglaiocercus kingi*	Meyer de Schauensee 1948–52
Aglaiocercus kingi × *Ramphomicron microrhynchum*	Meyer de Schauensee 1966 Wolters 1975–82
Thalurania furcata nigrofasciata × *Aglaiocercus kingi*	Hinkelmann, Nicolai & Dickerman (this paper)

investigated species with either a relatively long, slightly decurved bill, or a long forked tail. These striking characters are both found in *Neolesbia* and, if of hybrid origin, should point to the parent species; in Colombia, there are no hummingbird species with both characters. Thus, if *Neolesbia* is in fact of hybrid origin, its striking bill and tail characters should be intermediate between two parent species.

Colombian hummingbird species of similar body mass to *Neolesbia nehrkorni* (estimated from all measurements) and occurring within 400 km of Bogotá with (a) a relatively long (18–25 mm) slightly decurved bill are: *Chrysuronia oenone, Chalybura buffonii, Thalurania furcata* and *T. colombica* (considered a subspecies of *T. furcata* by some authors); or with (b) a long forked tail are: *Lesbia victoriae* and *Aglaiocercus kingi*. Because geographic variation within *A. kingi* has not been satisfactorily analysed (K.-L. Schuchmann, pers. comm.), we do not consider the different subspecies of this species. Below, we present our reasons for excluding most of the possible species pairings as well as those for suggesting the most probable hybrid origin of *Neolesbia nehrkorni*.

The tail feathers of *Chrysuronia oenone* are narrower than those of *Aglaiocercus kingi* and *Lesbia victoriae*, which in turn are narrower than those of *Neolesbia*. In *Neolesbia*, there is no trace of shining golden coppery colouration of tail and tail coverts, and no red in the lower mandible as in *C. oenone*. Besides, in Colombia *C. oenone* occurs from sea level to 1500 m whereas *L. victoriae* is found above 2600 m. Thus, the two species may hardly come into contact.

Chalybura buffonii has prominent white under tail-coverts whereas in *A. kingi* they are green-iridescent and in *L. victoriae* ochraceous. *Neolesbia*, however, has greenish-blue iridescent under tail-coverts with white margins. *Neolesbia* also has shorter wings than *A. kingi* or *C. buffonii*. *Lesbia victoriae* has shorter wings than *Neolesbia* and *C. buffonii*. Both species lack iridescent under tail-coverts and blue colouration elsewhere except for some bluish tinge on the throat and blue lower sides of the rectrices in *C. buffonii*.

Thalurania furcata, T. colombica and *L. victoriae* have shorter wings than *Neolesbia*. Both *Thalurania* species occur in Colombia below 2000 m whereas *L. victoriae* is found above 2600 m in the Colombian Andes.

TABLE 3

Measurements (mm) of adult male specimens of *Aglaiocercus kingi*, *Thalurania furcata nigrofasciata* and *T. colombica* from Colombia (ZFMK specimens), and of adult male *Heliangelus regalis* from Peru

		Bill		Wing (chord)		Tail	
	n	mean	range	mean	range	mean	range
Aglaiocercus kingi	10	13.5	12.5–14.5	65.4	62–68	132.4	115–148
Thalurania furcata nigrofasciata	4	20.5	19.5–21.5	55.1	54–57.5	40·6	38–42
Thalurania colombica	10	17.9	17.5–19	54.9	53.5–56	40.0	37–45
*Heliangelus regalis**	5	13.7	13.4–14.2	53.4	52.5–54·5	52.4	50.5–55
Heliangelus regalis (ZMUC 64198)	1	14		54.5		53	

*From Fitzpatrick *et al.* (1979)

Again, *Lesbia victoriae* may hardly come into contact with the *Thalurania* species in nature.

The offspring of an *Aglaiocercus kingi* × *Ramphomicron microrhynchum* (a suggestion offered by Meyer de Schauensee 1966 and Wolters 1975–82) would probably have a very short and straight bill similar to both parent species. The bill of *Neolesbia*, however, is longer than in both species and is, with the exception of the straight-billed ANSP specimen, slightly decurved.

Most probably *Neolesbia nehrkorni* is a hybrid between *Aglaiocercus kingi* and either *Thalurania furcata nigrofasciata* (the only subspecies occurring in Colombia) or *T. colombica*. The bill in *Neolesbia* is longer than in *A. kingi* and slightly shorter than in *T. furcata*, but of equal length with that of *T. colombica*. The wing of *Neolesbia* is slightly shorter than in *A. kingi* but longer than in *T. furcata* or *T. colombica* (Table 3). Several other characters appear to be intermediate between those of *A. kingi* and the two species of *Thalurania*: under tail-coverts, length as well as width and colour of the rectrices, colouration of lower breast and belly, tarsal feathers, wing-coverts, and the extension of nostril feathering (Fig. 1). A character of *Neolesbia* very similar to *A. kingi* is the non-iridescent inner halves of the central rectrices, whereas the underparts of the tail feathers and their black rachis point to *Thalurania*.

The contribution of *A. kingi* appears certain but it is more difficult to determine whether *T. furcata nigrofasciata* or *T. colombica* participated in the hybrid origin of *Neolesbia*. *T. colombica* has more blue colouration in its plumage (forecrown and most feathers of mantle, scapulars and wing-coverts are violet-blue instead of green), while *T. f. nigrofasciata* has a longer bill; both characters seem to be important prerequisites to create the particular appearance of *Neolesbia nehrkorni*.

In Colombia, *T. colombica* occurs in the lowlands west of the Andes as well as in the lower regions west of the eastern slopes of the Eastern Cordillera from sea level to 1900 m. *T. furcata* is limited to the lowlands east of the Andes; its altitudinal distribution ranges from sea level to 1800 m though most records are from below 1200 m. *Aglaiocercus kingi*

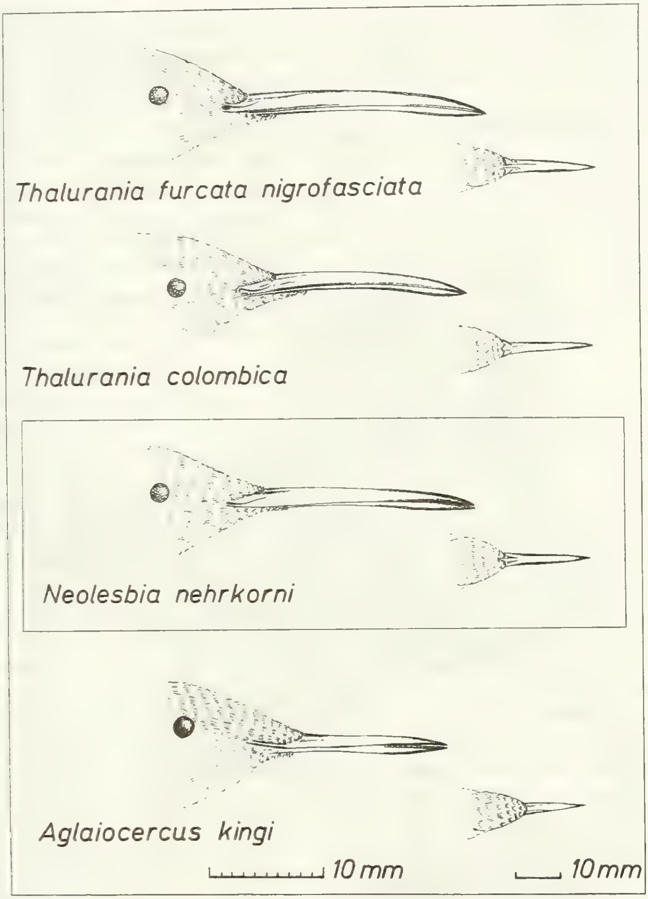
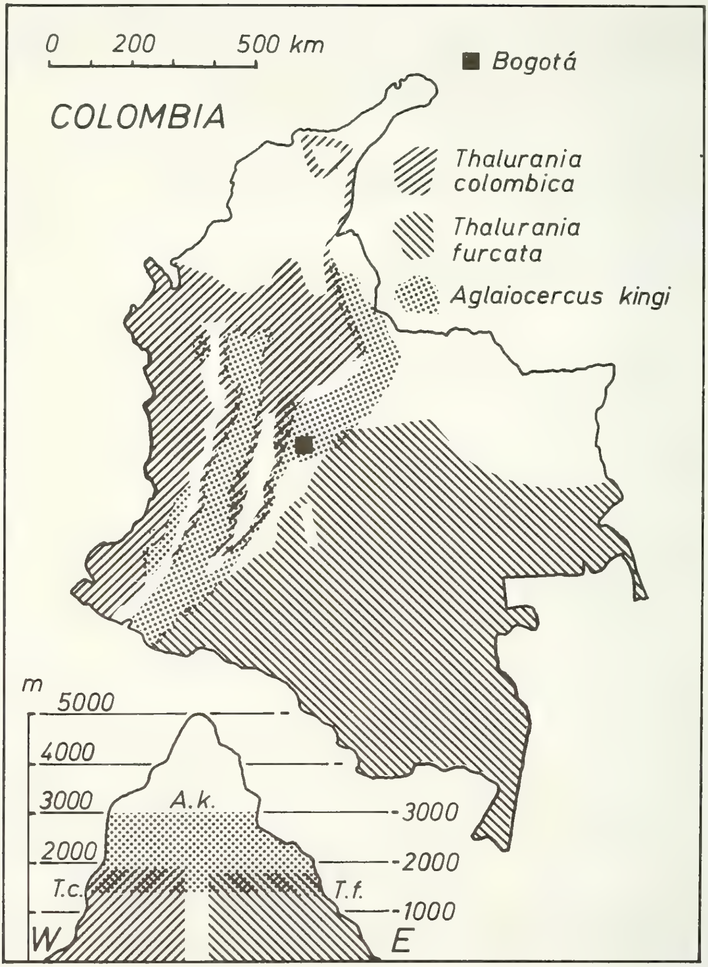


Figure 1. Heads of *Thalurania furcata nigrofasciata*, *T. colombica*, *Neolesbia nehrkorni* and *Aglaiocercus kingi*, demonstrating the different bill lengths and bill shapes as well as the various extensions of nostril feathering (based on specimens in the Museum Heineanum Halberstadt).

inhabits the Central Cordillera and some parts of the Western and Eastern Cordilleras above 1400 m (Fig. 2). The habitat preferences of all three species are more or less alike: humid and wet forest borders. The *Thalurania* species also occur in humid and wet forests, while *A. kingi* also inhabits second growth bushland, bushy clearings and similar habitats. They are probably rarely in contact in nature due to their altitudinal separation. However, this situation may be particularly liable to provide opportunities for *A. kingi* and the species of *Thalurania* to hybridize because where they may occasionally meet, at *Thalurania*'s upper altitudinal limit and *A. kingi*'s lower limit, opportunities to find a conspecific mate may well be reduced. This would be especially likely in the case of *A. kingi* and *T. furcata nigrofasciata* as there is less overlap in their altitudinal


0
200
500 km
COLOMBIA
Bogotá
Thalurania colombica
Thalurania furcata
Aglaiocercus kingi
m
5000
4000
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A.k.
T.c.
T.f.
3000
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1000
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E

Figure 2. Geographical and altitudinal distributions of *Thalurania furcata, T. colombica* and *Aglaiocercus kingi* in Colombia (modified after Hilty & Brown 1986).

ranges than there is between *A. kingi* and *T. colombica*. Furthermore, the fact that the bill-length of *Neolesbia* is intermediate between that of *A. kingi* and *T. furcata nigrofasciata*, but not between that of *A. kingi* and *T. colombica* (being the same as that of *T. colombica*), suggests that *A. kingi* and *T. furcata* are the most likely parent species.

Though many characters point to the hybrid origin of *Neolesbia nehrkorni*, there are others which are difficult to reconcile with the suggestion that *Neolesbia* is the result of hybridization between *Aglaiocercus* and *Thalurania*: blue upper tail-coverts with a trace of violet (these are green in *T. furcata* and bluish-green in *T. colombica* and

A. kingi), greenish-blue upperparts (these are green with a trace of blue in *T. furcata*, *T. colombica* and *A. kingi*), greenish-blue throat feathers (these are green with a tinge of turquoise in both species of *Thalurania*, and either like the *Thalurania* species or violet in *A. kingi*) and, according to Berlepsch (1887a, 1887b), a kind of broad golden breast band in the type specimen, which is lacking in all three putative parent species. Perhaps these characters as well as the general blue plumage may be due to the phenomenon of 'hybrid vigour' (Campbell & Lack 1985). The general blue colouration of the plumage is so unusual among hummingbirds that many authors have regarded *Neolesbia nehrkorni* as a valid species rather than a hybrid. They did not know of the several differences in colouration and measurements (see above) between the few specimens determined as *Neolesbia nehrkorni*.

Neolesbia nehrkorni, if a valid species, exhibits a greater degree of intraspecific variation than would be expected among so few specimens. Although there has been intensive field-work in Colombia within the last decades (summarized in Hilty & Brown 1986), neither the precise distribution nor the female of the form have been found.

Hybridization has occurred with regularity in hummingbirds; many taxa are based on hybrids. Whereas there is no indication of intergeneric pairing of *Aglaiocercus* apart from *Neolesbia*, there are several obvious as well as captivity records of hybrids between *Thalurania* species and hummingbirds of other genera (Gray 1958, Berlioz 1964, Scheithauer 1975, Grantsau 1988): *Thalurania glaucopis* × *Melanotrochilus fuscus*, *T. glaucopis* × *Leucochloris albicollis*, *T. glaucopis* × *Amazilia lactea*, *T. glaucopis* × *Amazilia leucogaster*, *T. furcata* × *Chlorestes notatus*, *T. furcata* × *Chrysuronia oenone*, and *T. furcata* × *Amazilia dumerilii*. In the collection of the Zoologisches Forschungsinstitut und Museum Alexander Koenig at Bonn is another, yet unpublished, hybrid specimen, a captive-bred *T. furcata* × *Trochilus polytmus* (ZFMK no. 84.251, ♂, leg. K.-L. Schuchmann). In comparison to *Neolesbia*, this specimen is of particular interest because it is intermediate in size between its parent species and has graduated tail feathers which are longer than those of *T. furcata*, but shorter than the extremely elongated rectrices (pair next to the outermost) of *T. polytmus* males. In this hybrid specimen, the pair of rectrices next to the outermost are slightly longer than the outermost, but in general the tail appears very similar to that of *Neolesbia nehrkorni*.

Comparison with *Heliangelus regalis*

Until recently, *Neolesbia nehrkorni* appeared to be the only 'species' of hummingbird with an almost entirely blue plumage. However, in 1979 Fitzpatrick *et al.* described a new species from a semi-isolated mountainous area in northern Peru, *Heliangelus regalis*, which to date is known from only two localities along the Eastern Andes of northern Peru (Davis 1986). Males of this species have almost the entire plumage dark blue, with some variation in the blue colouration of the forecrown and slight iridescence on the body feathers. Like *Neolesbia, Heliangelus regalis* has a relatively long tail with dark blue rectrices graduated in length, the two outer pairs being slightly bowed inward. Because the descriptions and illustrations of both taxa appeared very similar at first glance, we compared males of *Neolesbia nehrkorni* and *Heliangelus regalis* (*N. nehrkorni* MHH no. I 6843 A1—*H. regalis* ZMUC [Zoologisk Museum Copenhagen] no. 64198, ad. ♂, leg. Niels Krabbe, 3 September 1983, trail from San José de Lourdes to La Unión, S. Cordillera del Condor, N. Cajamarca, Peru, 1850 m, C.H. and B.N.; *N. nehrkorni* AMNH no. 484177—*H. regalis* AMNH no. 823987 [holotype] and 823988 [imm. ♂], R.W.D.). *Neolesbia* has a longer and heavier bill than *Heliangelus regalis*, which has a needle-like, straight bill. In general, *H. regalis* is smaller than *N. nehrkorni* (Table 3). Whereas *Neolesbia* has small, scale-like iridescent feathers on the chin and throat as well as on the crown, these are not different from the other body feathers in *Heliangelus regalis*. Feathers of the under tail-coverts are greenish-blue and iridescent in *N. nehrkorni*, but non-iridescent dark blue in *H. regalis*. There are also some slight differences in colouration and iridescence of hind neck, back and wing feathers, and the graduation of the rectrices is different. However, the superficial similarity between *Neolesbia nehrkorni* and *Heliangelus regalis* is impressive.

Acknowledgements

We are grateful to Dr H. König (Halberstadt), Dr J. Fjeldså (Copenhagen), Mrs Mary LeCroy, Drs F. Vuilleumier and L. L. Short (New York), and Drs Renate van den Elzen, K.-L. Schuchmann and G. Rheinwald for permitting us to examine specimens in their care. Dr D. von Knorre (Jena), Prof. Dr D. S. Peters and Dr J. Steinbacher (Frankfurt/Main), Dr G. Mauersberger and Prof. Dr B. Stephan (Berlin), Prof. Dr O. von Frisch (Braunschweig), Dr W. Zimmermann and Mr W. Samietz (Gotha) provided valuable references to the (probable) origins or depositories of *Neolesbia* specimens.

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Distribution and habitat selection of *Buteo polyosoma* and *B. poecilochrous* in Bolivia and neighbouring countries

by J. Cabot

Received 6 February 1991

Buteo polyosoma and *B. poecilochrous* are two South American hawks with overlapping ranges. The distribution of the former includes the range of the latter. *B. polyosoma* occurs in central Colombia (perhaps only as a migrant; Hilty & Brown 1986), the Pacific lowlands and Andean regions of Ecuador and Peru, Andean and Chaquean regions of Bolivia (Cabot & Serrano 1986, 1988), mountains and pre-Andean hills of western Argentina to Tierra del Fuego, the Malvinas, and locally in Córdoba and Buenos Aires Provinces, Chile (south to Cape Horn), Paraguay, and possibly accidentally in Uruguay and Brazil. The subspecies *exsul* inhabits the Juan Fernandez Islands (Blake 1977). *B. poecilochrous* is distributed in the high chains and altiplanos of the Andes from southwestern Colombia (also considered as a possible migrant; Hilty & Brown 1986) to northwestern Argentina and northern Chile (Blake 1977).

The two species overlap in size. In general *B. poecilochrous* is larger than *B. polyosoma*, but the female of the latter is about the same size as the male of the former. Furthermore, the two demonstrate similarity and variability in plumage types. *B. polyosoma* has five plumage types (Vaurie 1962), four of them virtually duplicated in *B. poecilochrous*. The overlapping geographical distributions and sizes of the two species, the similarity and variability of their plumages and the lack of field studies of both species have led some authors, in the past, to consider *B. poecilochrous* as individual variants (Hellmayr & Conover 1949) or an altitudinal form (Amadon in Vaurie 1962) of *B. polyosoma*. Also the paucity of reliable sex data on the labels of museum specimens has added to the confusion.

On the basis of museum skins Chapman (1926), Hellmayr (1932), Hellmayr (in Hellmayr & Conover 1949) and Vaurie (1962) take the wing formulae (Stresemann 1925) to be a valid criterion for identification in the hand. The criterion is that the 3rd primary is usually longest along with the 5th in *B. polyosoma*, but in *B. poecilochrous* the 5th is not always longer than the 3rd.

In the first part of this paper the flight features of each species are presented, for field identification. In the second part, the distribution and selection of habitats in Bolivia and neighbouring countries are discussed. For flight identification observed features are presented, on the basis of silhouettes and measurements of skins in the Museo Nacional de Ciencias Naturales de Madrid and Estación Biológica de Doñana. Data on habitat selection and distribution were obtained in the course of field work in 1981–86 and August 1988 in several Bolivian departments, also from Bolivian specimens in the collections of Museum Zoology of Louisiana State University (LSUMZ) and from the literature.

Flight identification

Some authors consider the two species indistinguishable in the field (Meyer de Schauensee 1970, Hilty & Brown 1986), perhaps due in part to the difficulty that has existed in their hand identification, combined with a lack of experience with their silhouettes. Cabot & Serrano (1986) mention some features that allow differentiation of the species by their silhouettes in flight. These are presented here in more detailed form.

The traits which characterize each species are as follows:

B. polyosoma—Graceful silhouette (Fig. 1a). The wings (more slender and rectilinear than *B. poecilochrous*) appear long in relation to the width; the anterior and posterior edges of the wing tend to be more or less parallel, with a less rounded configuration. The tail appears to be longer due to the relative narrowness of the wing and to its rectangular form, even though in reality it is shorter than the tail of *B. poecilochrous*; that the tail tends normally to maintain a rectangular form may also influence this perception.

B. poecilochrous—Wings large and wide, tail appearing relatively shorter and rounded (Fig. 1b). The posterior edge of the wing is usually curved, giving the wing a more or less rounded outline; this roundness of the wing has been mentioned by Dorst (1956). The tail protrudes little; it is usually slightly open, appearing wedge-shaped, the distal edge rounded. The sharp angle between the lateral edge of the tail and the rear edge of the wing is characteristic.

The measurements presented in Table 1 corroborate the above points. *B. poecilochrous* surpasses *B. polyosoma* by 15% in both total length and wing-span. *B. poecilochrous* also has wider wings than *B. polyosoma*, since its secondaries are both absolutely and proportionally longer.

Distribution and habitat selection in Bolivia

Localities where the two species were recorded are listed for each department, from north to south (Figs 2 and 3). Records of more than one

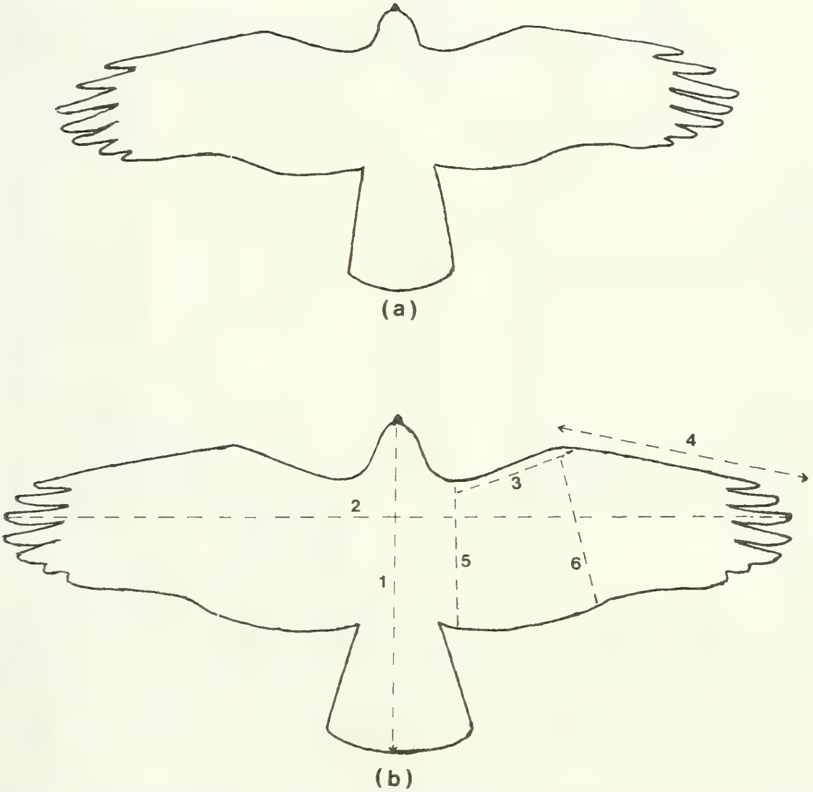


Figure 1. Flight silhouettes of *Buteo polyosoma* (a) and *B. poecilochrous* (b), based on the following measurements (Table 1): 1, total length; 2, wing-span; 3, forearm length; 4, wing length; 5, innermost secondary length; 6, outermost secondary length.

individual in a locality are noted. In the Andean region records are allocated in three life zones. (1) Cordillera: slopes and valleys on the crest of the eastern Andean chain to perpetually snow-covered mountain-tops, above 4500 m. (2) Puna: rolling hills, groups of hills and plains on the Altiplano (the inter-Andean plateau), between 3700 and 4500 m. (3) Mesothermic valleys: drier intermontane valleys of the eastern Andes, with xeromorphic vegetation, principally scrub and trees generally near water courses; from 1000 to 3600 m. These valleys have been extensively deforested.

B. polyosoma

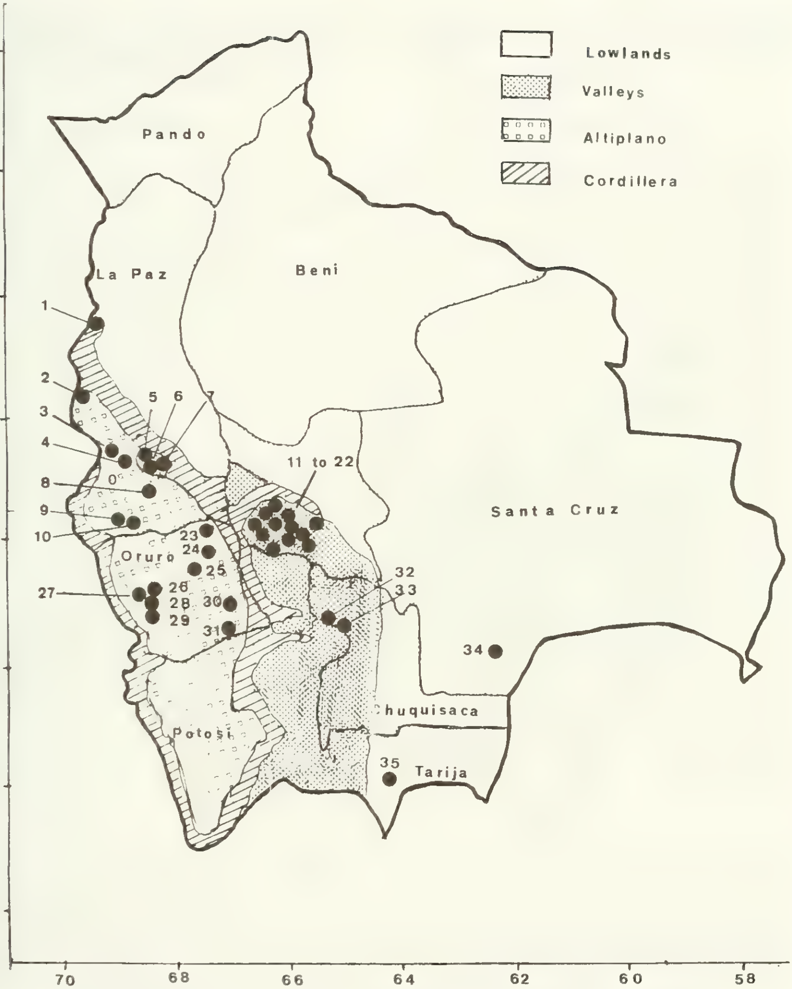
La Paz Dpt.
1: Ulla-Ulla Reserve, 4600 m; high puna, moraine hills near cordilleran zone, short alpine grass, 22 Jul 1982. 2: Tiawanacu, 3800 m; semi-arid puna, stony hills and plains, tussock grass, some areas dotted with thola scrub (*Lepidophyllum*) and some fields of potatoes on the slopes, 3 Sep 1983. 3: Achuma de Santa Ana, *c.* 45 km SW of Viacha, 4000 m; puna, gentle

TABLE 1
Average and range of measurements of *Buteo polyosoma* and *B. poecilochrous*

	Male			Female		
Lengths	$\bar{x}$	range	n	$\bar{x}$	range	n
		B. polyosoma				
Total	475	470–480	2			
Wing-span	1130		2			
Forearm	121.1	115–128.5	18	130.5	129–132	2
Wing	370	350–392	18	391	390–392	2
Innermost secondary	158	140–174	18	175	167–184	2
Outermost secondary	189	180–202	18	201.5	200–203	2
Tail	190	173–212	18	217	211–223	2
		B. poecilochrous				
Total	550	540–565	3	572		1
Wing-span	1310		1	1390		2
Forearm	136.8	130–143.5	8	144	139.2–150.5	8
Wing	421.6	402–444	8	461	446–474	8
Innermost secondary	200.1	184–215	8	214.5	199–222	8
Outermost secondary	236.7	223–248	8	257.2	243–263	8
Tail	215.9	190–228	8	237.3	225–265	8

slopes, thola scrub on the slopes and tussock grass on low ground, 10 Mar 1983. 4: Viacha, 3840 m; puna, extensive plains with gentle slopes, tussock grass, 1 Sep 1941, LSUMZ 37061. 5: Palca, 3200 m; mesothermic valley, eroded steep slopes and gullies in valley bottom, fields and scattered *Eucalyptus* trees in low parts and bushes and tussock grass on the slopes, 20 Jan 1982 and 21 Jul 1984. Previously recorded in this locality by Lafresnaye & D'Orbigny (in Chapman 1926). 6: Animas, 4 km SW La Paz city, 3700 m; mesothermic valley, habitat similar to 5, 13 Nov and 9 Dec 1983. 7: Rio Abajo, near La Paz city, 3200 m; mesothermic valley, habitat similar to 5, many observations 1982–1984. 8: Patacamaya, 3900 m; puna, rolling stony plains, tussock grass and thola scrub, 23 Jun 1984. 9: Huachacalla, 3870 m; puna, plains with thola scrub, 10 Nov 1984. 10: Campero, 3800 m; puna, habitat similar to above.

Cochabamba Dpt.
11: Parque Nacional Tunari, 12 km NE of Cochabamba, 3000 m; mesothermic valley, steep slopes with *Polylepis* woods and tussock grass, 14 Apr 1984 (two immatures) and 4 May 1985. 12: Near Cochabamba city, 2500 m; mesothermic valley, gentle slopes, thorny shrubs and scattered leguminous and pepper trees (*Schinus molle*) alternating with fields, 25 Aug 1988. Previous records are 37062 and 37063 LSUMZ of Jan 1957 and 15 Jul 1939 respectively. 13: km 130 on the Cochabamba road to Santa Cruz de la Sierra, 3700 m; puna, transition with mesothermic valley, steep slopes with *Polylepis* woods and fields in the low parts, 2 Jun 1986. 14: Near Laguna Urkupiña, 4 km S of Quillacollo, 2500 m; mesothermic valley, hills with thorny scrub and columnar cacti, scattered trees. Three birds together May 1985, and one Oct 1985. 15: Between Cochabamba and Santibañez, 2500 m; habitat similar to above, 22 May 1985. 16: La Angostura, 20 km S of Cochabamba city, 2600 m; habitat similar to above, 14 May 1984 and 19 May 1985. 17: Arani (Fjeldså 1987), 3200 m; mesothermic valley, small fields surrounded by arid stony terrain with little grass and scattered bushes, some cacti and a few leguminous trees, 15–16 Apr 1987. 18: Llavini, 3500 m; high parts of mesothermic valley, arid and stony mountain slopes with *Polylepis* trees, tussock grass and scattered bushes, 21 Jan 1986. 19: Cerro Keñua-Sandra (Fjeldså 1987), 3900 m; high parts of mesothermic valley, mountains with dry bushy slopes and *Polylepis* trees, 12–14 Apr 1987. 20: Totora, mesothermic valley, 2603 m; hills with stony slopes with tussock grass, small fields and scattered trees, 22 Jun 1985. 21: Julpemayu, 2000 m; mesothermic valley, mountains with hanging slopes, narrow valleys and eroded gorges, heavy covering of leguminous trees, dense thorny thicket and columnar cacti, 21 Jun 1985. 22: Near Mizque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Cordillera
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Figure 2. Bolivian localities where *B. polyosoma* has been recorded.

(Fjeldså 1987), 3100–3600 m; mesothermic valley, gully with dense thickets of *Polylepis* and other bushes, trees and mistletoes, 17 Apr 1987.

Oruro Dpt.
23: Caracollo, 3850 m; puna, rolling stony terrain with thola and tussock grass, two birds, Apr 1983 and 16 Mar 1984. 24: between Oruro and Lago Uru-Uru, 3700 m; puna, humid salt-flat plains, scattered short halophytes, 18 Aug 1984. 25: Toledo; puna, same altitude, habitat and date as previous locality. 26: Laguna Kasilla, 3600 m; puna, rolling arid stony terrain and low hills with thola shrubbery and tussock grass, 20 Aug 1984. 27: Opoquere; puna, same altitude, habitat and date as preceding locality. 28: Andakare; puna, same habitat and date as preceding localities. 29: Sabaya, 3900 m; puna, salt plains with tussock grass and short halophytes, 18 Aug 1984. 30: Challapata, 3650 m; puna, humid plains with

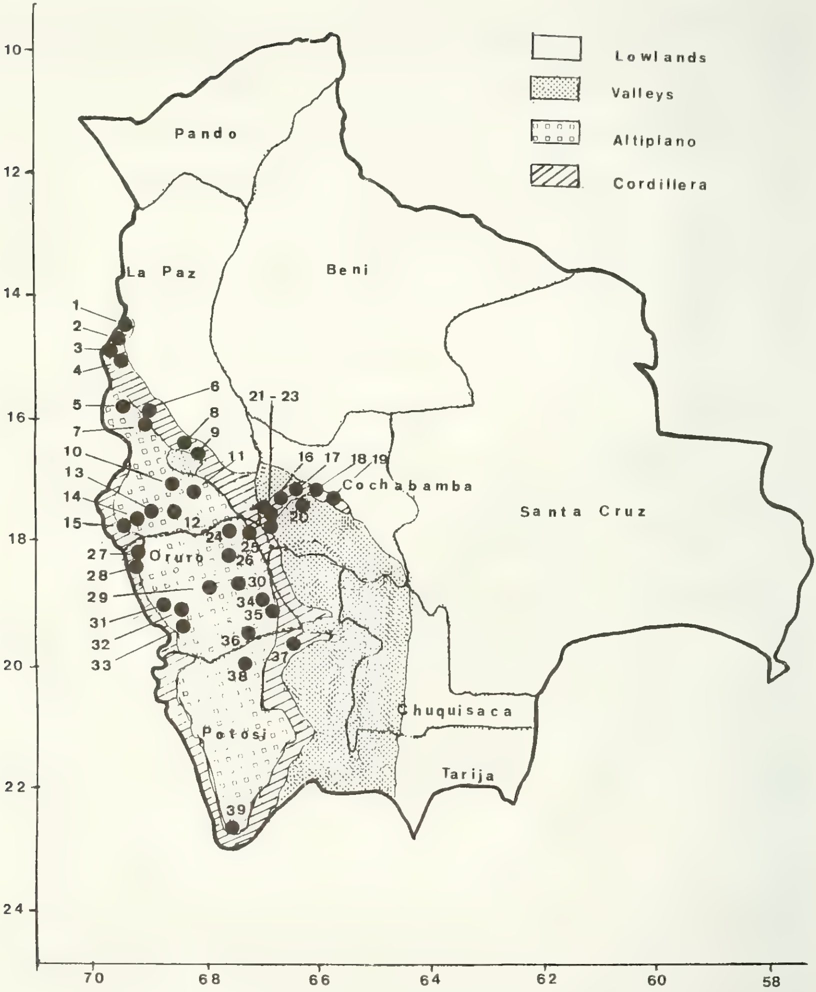
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Figure 3. Bolivian localities where *B. poecilochrous* has been recorded.

surrounding hills, short grass and tussocks, two birds, not together, 28 Jun 1984. 31: Sevaruyo, 3700 m; puna, plains with tussock grass and bogs, two birds, not together, 28 Jul 1984.

Chuquisaca Dpt.
32: 30 km S of Sucre city, 3000 m; mesothermic valley, mountains with steep slopes, degraded vegetation with fields and thorny scrub, scattered trees of *Prosopis, Acacia* and pepper trees, and small fields, 25 Jul 1984. 33: 20 km on the road to Sucre from Cochabamba, 2900 m; mesothermic valley, same habitat and date as preceding locality.

Santa Cruz Dpt.
34: Cerro Colorado (19°50′S, 62°21′W), 400 m; Chaco, in scattered rocky hills on an extensive plain, thorny thickets, columnar cacti and scattered trees on the slopes, 17–19 Sep 1986.

Tarija Dpt.
35: Tatarenda (21°50′S, 63°37′W), 600 m; Chaco, on the border between tropical forest and dry woodland, open areas marshy during the wet season and afterwards dry and covered with grass, Mar 1902 (Lönnberg 1903).

B. poecilochrous

La Paz Dpt.
1: Katantica, Pelechuco pass, 4600–5000 m; cordillera, on the crest of the mountains, cliffs and steep rocky slopes; high alpine vegetation, bogs in the humid bottom. Common all year, on many occasions in pairs, 1981–1982. 2: Plains of Ulla-Ulla, 4400 m; high puna, extensive plains near Cordillera Apolobamba, with some low hills, stony ground with some humid areas, short alpine grass. Rare, especially during the austral summer, some observations between 1981–1982, usually circling above hills, some in pairs. 3: Charazani and Curva pass, 4600–4900 m; cordillera, same habitat, vegetation, date and status as locality 1. 4: Huila-K'hala, 4400 m; high puna, mountains near Cordillera Apolobamba with rounded peaks, steep slopes and deep valleys, short tall grass prairie with some tussock grass, Jan 1981. 5: Katacora, near Lake Titicaca, 3800 m; puna, with rocky hills and stony plains, tussock grass and other growth. One pair associated with a cliff, 18 Nov 1984. 6: Zongo pass, 4800 m; cordillera, high mountains with sheer and steep slopes, high alpine vegetation, 8–10 Apr 1987 (Fjeldså 1987). 7: Peñas, between La Paz and Lake Titicaca, 4000 m; puna, stony and rocky slopes, tussock grass and other scattered growth, 8 Apr 1984. 8: La Cumbre, Yungas pass, 4900 m; cordillera, on the crest of the mountains, steep rocky slopes and deep steep valleys with humid bottoms. Habitat and vegetation similar to localities 1, 3 and 7. Several summer and winter observations 1981–1986, some in pairs. 9: Palca, 3900 m; puna, between the cordilleran zone and mesothermic valley, rounded mountains, steep slopes and narrow valleys, tussock grass and some potato fields, 23 Jul 1984. 10: Comanche, 4100 m; puna, rounded hills with stony slopes and cliffs in high parts, tussock grass, thola shrubs and *Puya raimondii* on hillsides. Several summer and winter observations of a pair settled on a cliff, two adults with fledging chick on 6 Mar 1984. 11: 30 km S of La Paz city, 3800 m; puna, rolling stony plains, poor vegetation of bunch grass and scattered thola shrubs, 7 Jan 1984. 12: Esperanza, on Río Viscachani, 4200 m; puna, no habitat description (Paynter *et al.* 1975), LSUMZ 37059 and 37060, male and female, 21 and 23 Nov 1941. 13: Sopocachi, 3800 m; arid puna, scattered rocky mountains with some cliffs on a plain, *Polylepis* trees in the high parts and thola bushes and bunch grass in lower areas. A pair settled on a cliff, 10 Nov 1984. 14: Campero, arid puna; habitat and date as previous locality. 15: Puerto Perez, 3840 m; arid puna; rocky mountains and plains, thola bushes, bunch grass and some patches of *Polylepis* on the slopes, 3 Nov 1984.

Cochabamba Dpt.
16: Parque Nacional Tunari, 14 km NE of Cochabamba city, 4200 m; puna, rounded mountains in transition zone between the cordillera and mesothermic valley, extensive tussock grass, 17 Nov 1985. 17: 70 km E of Cochabamba city, 4050 m; puna, rounded mountains with steep slopes and deep valleys near the cordilleran zone, dense tussock grass in the high parts and small patches of *Polylepis* in the low parts and valley bottoms, 15 Sep 1988. 18: Tiraque, 4020 m, cordillera, rounded mountains with rocky areas and cliffs near extensive humid plains, short alpine grass, 1 Mar 1984. 19: 120 km E of Cochabamba city, on the road to Santa Cruz de la Sierra; 3950 m; puna, mountains with steep slopes, bunch grass in the high parts, *Polylepis* woodland in the middle and low parts, 6 Aug 1984, 2 Apr and 19 Oct 1985. 20: Parotani, 2500 m; mesothermic valley, mountains with steep eroded slopes of gravel and closed valleys, dense thorny shrub, columnar cacti and some leguminous and pepper trees, a pair Jan 1986. 21: Llavini, 54 km W of Cochabamba city, 3680 m; puna, mountains bordering mesothermic valley, pastures of bunch grass on the peaks and degraded *Polylepis* woodland in middle and lower parts, several observations between Oct 1985 and Jan 1986, some observations of pairs. 22: Cerro Sayari (Fjeldså 1987), 4500 m; puna, mountains with some rocky outcrops and ravines, poor vegetation of composites and cacti, 12 Apr 1987. 23: Challa, near departmental limit with Oruro, 3900–4060 m; puna, mountains with smooth slopes, overgrazed pastures of bunch grass and small patches of thola, several observations 1985–1986, some birds in pairs.

Oruro Dpt.
24: Caracollo, 3750 m; puna, stony plains and scattered hills with gentle slopes, tussock grass and thola bushes, a pair 5 May 1985. 25: Caihuasi, 4000 m; puna, arid, rocky

mountainous area in extensive plains with steep slopes and streams in valley bottoms, tussock grass and extensive thola, Dec 1985. 26: Near Lake Uru-Uru, 3700 m; puna, extensive and uniform plains with some scattered low hills, bunch grass and thola, 17 Aug 1984. 27: Sajama (Fjeldså 1987), 4300 m; puna, extensive humid grasslands surrounded by very arid country, 1 May 1987. 28: around the Bolivian border Station Tambo Quemado (Fjeldså 1987), 4300–4550 m; arid puna, pumice slopes with scattered grass, 1 May 1987. 29: Laguna Kanasa, 3900 m; puna, extensive stony plains and gentle slopes with dense growth of thola, 17 Aug 1984. 30: Callipampa (Bond & Meyer de Schauensee 1943), 3700 m; puna, low mountains, steep valleys with much outcropping, 6–13 Mar 1938. 31: Rio Lauca, near Huachacalla, *c.* 4000 m; puna, extensive sandy flat plains with uniform cover of thola shrubbery, 20 Aug 1984. 32: Huachacalla, 3900 m; puna, extensive plains with some low hills, extensive thola shrubbery, 20 Aug 1984. 33: Near Sabaya, *c.* 4000 m; puna, plains and isolated low mountains, bunch grass and thola, 21 Aug 1984. 34: Upper Río Crucero (Fjeldså 1987), 3700–4000 m; puna, the high parts plains with grass and thola heath and some boggy tracts, surrounded by low hills, 23 Apr 1987. 35: Challapata, 3700; puna, plains surrounded by low hills, tussock grass and thola, 23 Apr 1984. 36: Sevaruyo, 3700 m; puna, sandy plains with extensive and uniform cover of thola shrubbery, 6 Nov 1982.

Potosí Dpt.
37: Estancia Kenkoara (Fjeldså 1987), between Potosí city and Chullpa-Khasa, 3700 m; puna, dry stony slopes with low thorny scrub and many small wheat fields, 21–22 Apr 1987. 38: Yura, 4100 m; arid puna, plains with eroded gorges with dense and uniform cover of thola shrubs, 2 Aug 1984. 39: near Laguna Colorada, 4100 m; puna, extensive desert plains with rocky hills, the plains practically devoid of vegetation, scattered patches of thola and cushion plants of yareta on the stony slopes.

To summarize, in Bolivia *B. polyosoma* has been recorded on the altiplano or puna (48.6% of recorded localities), in mesothermic valleys (45.7%) and in Chaquean lowlands (5.7%), never in high mountains on the crest of the cordillera, locality 1 being closest to the cordilleran region. On the altiplano (the inter-Andean plateau) the observations of single specimens were during the austral winter, and for this reason Cabot & Serrano (1986) suggested that migrants from more southern areas may winter there. A summer specimen (EBD 6179A), Dec 1982, identified erroneously by Cabot & Serrano (1986) as *polyosoma* has since been re-identified as *poecilochrous*. The only specimen recorded during times other than winter is an immature (EBD 3171A) on 21 Nov 1981, in the austral spring, on the shore of Lake Titicaca. In the mesothermic valleys it was recorded in the high parts, above *Polylepis* woods on the puna border, as well as the valley bottoms, in all seasons; possibly wintering birds were present in this zone. For the Chaquean region little information is available: one adult specimen in Mar 1902 (Lönnberg 1903), two immature specimens (EBD 11210A and 11225A) on 17 and 19 Sep 1986 (Cabot & Serrano 1988) and some other single birds seen on these dates, circling above small rocky hills with poor vegetation and leguminous trees, columnar cacti and dense cover of thorny bushes alternating with open land. From the dates, these birds could also have been southern migrants.

B. poecilochrous is virtually restricted in Bolivia to the cordillera (12.8% of recorded localities), and the altiplano (84.6%), approximately from 3600 to the limits of permanent snow. The recording of a pair at 2500 m in a mesothermic valley bottom may be exceptional. The species has been recorded at all times of the year, frequently in pairs and associated with steep craggy places (Cabot & Serrano 1986).

On the altiplano, where both species occur, they tend to occupy different areas. *B. polyosoma* was recorded in flat areas, frequently perched on posts or isolated rocks, while *B. poecilochrous* was seen in hilly or mountainous areas, preferably with steep slopes.

Data on habitat selection in neighbouring countries

Buteo polyosoma

In Peru *B. polyosoma* is distributed in areas of lower elevation and occupies a greater diversity of habitats than *B. poecilochrous*. Koepcke (1954) did not cite it for the puna zone, but later (Koepcke 1964) stated that, although it is known at all altitudes of Lima Dpt., it is typically a bird of low-lying areas (the coast and lower Andean slopes). Parker *et al.* (1982) cite it as occurring in various life zones of the arid western Andean slopes from the coastal lowlands up to 3000 m, and on the eastern Andean slopes from the humid upper tropical forest (1500 m) up to the temperate humid zone (3000 m). It is not cited for the puna by these authors. Fjeldså (1987) recorded it on wastelands with crops, thickets, bushes and scattered trees usually below the altiplano.

In Argentina, according to Contreras *et al.* (1990), *B. polyosoma* emigrates from the Andean and Patagonian regions to the flat lands and subtropical regions of northern and eastern Argentina, Paraguay and possibly Uruguay; in the eastern and northern La Plata basin reaching its greatest concentrations in June, July and August and, occasionally, in October in Corrientes (Contreras, in prep.). Contreras (pers. comm.) saw one in Paraguayan Chaco, adjoining Bolivia, on 9 September 1989. Lönnberg (1903) mentioned a specimen collected in December 1902 in Moreno, on the puna of Jujuy at 3900 m, on a extensive plain surrounded by mountains which attain a maximum height of 6100 m.

B. poecilochrous

In Peru *B. poecilochrous* can be found in the same habitats as in Bolivia. Koepcke (1954) cited it in the deserts and semideserts of the altiplano and high cordillera, between 4600 and 4700 m, and on high mountain steppes between 2900 and 3200 m. She considered that it replaces *B. polyosoma* at high altitudes (Koepcke 1964). Dorst (1956, 1962) described it as a common species on the high southern plains of Peru and cited specimens collected in mountainous areas between 3900 and 4600 m. Venero & Brokaw (1980) describe it as a permanent resident, alone or in pairs, of scrubland and rocky terrain of the northern Peruvian puna, above 4000 m; and Parker *et al.* (1982) as a species exclusive to the puna from 3400 to above 4500 m. Macedo (1964) recorded a nesting pair on the altiplano, in Puno, at 3800 m; Fjeldså (1983, 1987) considers it a common bird of the Junín puna in central Peru, and in the surrounding cordilleras and hills, up to 5000 m; he recorded it in puna hills, rugged mountain areas, gently rolling hills with *Polylepis* woodlands and *Puya raimondii* stands, in 21 localities between 3600 and 5000 m.

In northern Argentina it also occupies parts of the altiplano and high cordillera (Blake 1977), and on the Tranque de Caritaya also in Chile, where it was recorded by Johnson (1965) at 3600 m, and by Fjeldså (1987) in desert puna at Cota-Cotani (Laguna Parinacota) at 4000 m.

For Colombia and Ecuador less information is available, and is rather different from that given above. In Colombia Hilty & Brown (1986) state that *B. polyosoma* usually occurs near or above the tree line on open mountain slopes between 1800 and 3200 m (and probably higher), while *B. poecilochrous* occurs between 900 and 2000 m (and probably higher); and that both species may be migrants as neither has been recorded breeding. In Ecuador, Chapman (1926) gave records of *B. polyosoma* from the coastal lowlands up to 3937 m, and of *B. poecilochrous* at 3937 m. Marchant (1960) recorded *B. polyosoma* breeding in the arid coastal lowlands.

Summary of habitat selection

In the geographic zones where *B. polyosoma* and *B. poecilochrous* coincide, they tend to be segregated spatially. The former species occupies a greater diversity of habitats (open or wooded) over an ample altitudinal range, from the Pacific coast or Chaquean lowlands up to the altiplano. *B. poecilochrous* frequents open habitats on the altiplano and in the high Andean mountains, between *c.* 3600 and 5000 m; it has also been recorded in the local and now much reduced high-altitude *Polylepis* woodlands. On the Bolivian altiplano *B. polyosoma* is a solitary winter resident and is found on flat areas. *B. poecilochrous* is a permanent resident, often in pairs and generally associated with rocky hills and mountains with cliffs.

Acknowledgements

I am grateful to Dr Ovidio Suarez and Prof. Gastón Bejarano for the use of facilities during our stay in Bolivia; to the Spanish Ambassador, D. Tomás Lozano, for his support and cooperation; and to Antonio Jimenez Lara, who accompanied me on many excursions to the country. J. V. Remsen supplied information on specimens collected in Bolivia and deposited in the collection of the Louisiana State University Museum. J. Barreiro, curator of the vertebrate collection of the Museo de Ciencias Naturales de Madrid, allowed me to study the skins in his care. Aid from Instituto Español de Emigración y de Cooperación Técnica Internacional financed my stay from 1981 to 1986. The association 'Amigos de Doñana' financed my travel and living expenses in August and September 1988. J. Fjeldså reviewed the manuscript and provided useful advice.

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On the occurrence of the Black Stork *Ciconia nigra* in West Africa

by J. Frank Walsh

Received 22 February 1991

The Black Stork *Ciconia nigra* has probably been uncommon in West Africa throughout the century. Its main breeding range in the Palaearctic is located east of 16°E, and the isolated, and declining, population in Iberia is partly sedentary (Cramp & Simmons 1977). West Africa proper lies between 16°W and 10°E. Brown *et al.* (1982) map the Black Stork as occurring right across West Africa between approximately 11° and 15°N. They also state that it is scarce in West Africa, though it enters the continent through Gibraltar and also crosses the Mediterranean on a broad front. The decline of the Western European population prompted Moreau (1972) to suggest that "the scanty records in West Africa may never be augmented now . . .". This forecast has, happily, proved to be unduly pessimistic. Since 1965 there have been published and unpublished reports of Black Storks in five West African countries, while recent aerial surveys, reported below, provide records for six countries. In one or two localities Black Storks, though never common, have occurred with some regularity.

Published observations of Black Storks in West Africa

Bannerman (1953) was able to report very few cases of Black Storks in West Africa, citing records only from the Gambia, Guinea Bissao, Ghana and Nigeria. Published reports in the last 25 years (Walsh 1989) include birds in the lower Senegal valley in both Mauritania (Browne 1982) and Senegal (Roux 1973, Morel & Roux 1973), with up to 16 birds present in early 1972. There is a single record in February from the inland delta of the Niger in Mali (Lamarche 1980), and a number of records from Nigeria. From the latter country one was seen in the Komodugu-Gana valley in January 1965 (Sharland & Wilkinson 1981), one from the Oli valley in April 1968 (Walsh 1968), one from the Benue valley in November 1969 (Fry 1970) and up to six in several recent years during October–March from the Gaji river in the Yankari Game Reserve (Geerling 1976, Crick & Marshall 1981, Green 1989). Black Storks have also been seen in recent years in the Kano valley in the Falgore Game Reserve (Wilkinson & Beecroft (1985). In addition a flock of eight was seen in the Red Volta valley in Burkina Faso in January 1983 (Y. Thonnerieux, pers. comm.).

Aerial observations 1987–1990

During my work for the Onchocerciasis Control Programme of the World Health Organisation since 1987 I have flown more than 650 hours in helicopters along river valleys in West Africa. All riverine habitats in Ghana, Togo and Benin, likely to be suitable for the Black Stork, were surveyed on several occasions. A single flight was made along the Comoé-Léraba valley of Burkina Faso/Ivory Coast in February 1989, and a few flights were made in southern Burkina Faso in September–November and in southwest Niger in September–November, January and April.

All flights were made in Hughes 500 helicopters, generally at heights less than 200 ft above ground and at speeds of 80 to 100 knots. Flights were made to investigate the hydrological conditions or with the intention of spraying chemicals into the rivers. In addition details were logged of all storks which were encountered.

Observations of Black Storks from helicopters (together with the sole ground observation) are listed in Table 1 in longitudinal order starting in the west. Black Storks were seen on 32 separate occasions, and a total of 82 birds counted, though some individuals were almost certainly seen on more than one date. The seasonality of observations is shown in Table 2. Group size (averaging 2.6 birds/sighting) and association with the Woolly-necked Stork *Ciconia episcopus* are shown in Figure 1. In addition Black Storks are found in company with other species, especially Grey Heron *Ardea cinerea* and Spur-winged Goose *Plectropterus gambensis*, and occasionally with Saddle-billed Stork *Ephippiorhynchus senegalensis*, when they are at rest on riverine sandbanks.

Observation from helicopters usually precludes detailed examination of individual birds, but parties of four on 25 October 1988 and 8 February 1989 each consisted of two adult and two immature birds, while a party of three on 20 January 1989 was composed of two adults and one immature, and two birds seen together on 16 November 1988 proved to be an adult and an immature.

TABLE 1
Details of Black Storks seen in West Africa during 1987–1990

Country	River basin	Coordinates	Date	No. of birds	Vegetation	Land use/ occupancy
Ivory Coast/ Burkina Faso	Comoé	9°51′N, 4°50′W	8.2.89	3	Northern Guinea Savanna	Game Reserve/ Wilderness
Ivory Coast/ Burkina Faso	Comoé	9°50′N, 4°48′W	8.2.89	1	Northern Guinea Savanna	Game Reserve/ Wilderness
Ivory Coast/ Burkina Faso	Comoé	9°41′N, 4°26′W	8.2.89	4	Northern Guinea Savanna	Game Reserve/ Wilderness
Ghana	Black Volta	8°36′N, 2°25′W	7.2.89	1	Southern Guinea Savanna	National Park
Ghana	Black Volta	8°36′N, 2°25′W	9.1.90	1	Southern Guinea Savanna	National Park
Ghana	Mole	9°23′N, 1°50′W	10.1.90	2	Southern Guinea Savanna	National Park
Ghana	Mole	9°18′N, 1°33′W	10.1.90	1	Southern Guinea Savanna	Wilderness
Ghana	Sissili/Kulpawn	10°49′N, 1°40′W	17.11.87	8	Northern Guinea Savanna	Wilderness
Ghana	Sissili/Kulpawn	10°36′N, 1°34′W	25.10.88	4	Northern Guinea Savanna	Wilderness
Ghana	Sissili/Kulpawn	10°09′N, 1°25′W	11.1.90	6	Northern Guinea Savanna	Sparsely populated
Ghana	Sissili/Kulpawn	10°16′N, 1°15′W	11.1.90	1	Northern Guinea Savanna	Sparsely populated
Ghana	White Volta	9°21′N, 1°17′W	7.3.89	3	Open grassland	Moderately populated
Ghana*	White Volta	10°21′N, 1°05′W	4.2.87	2	Open grassland	Moderately populated
Ghana	White Volta	9°56′N, 0°59′W	20.1.89	3	Open grassland	Sparsely populated
Ghana	White Volta	9°56′N, 0°59′W	7.3.89	5	Open grassland	Sparsely populated
Togo	Koumongou	10°13′N, 0°29′E	6.2.90	2	Northern Guinea Savanna	National Park
Togo	Koumongou	10°13′N, 0°29′E	10.2.90	1	Northern Guinea Savanna	National Park
Togo	Koumongou	10°11′N, 0°37′E	9.2.88	2	Northern Guinea Savanna	National Park
Togo	Koumongou	10°11′N, 0°39′E	9.2.88	1	Northern Guinea Savanna	National Park
Togo	Koumongou	10°11′N, 0°39′E	3.3.90	1	Northern Guinea Savanna	National Park
Togo**	Koumongou	10°09′N, 0°45′E	17.3.90	1	Northern Guinea Savanna	National Park
Togo	Oti	10°40′N, 0°46′E	6.1.90	1	Open flood plain	Game Reserve
Benin/ Burkina Faso	Pendjari	11°12′N, 1°09′E	16.11.88	2	Northern Guinea Savanna	National Park/ Game Reserve
Benin/ Burkina Faso	Pendjari	11°12′N, 1°09′E	11.1.89	1	Northern Guinea Savanna	National Park/ Game Reserve
Benin/ Burkina Faso	Pendjari	11°12′N, 1°09′E	24.1.89	9	Northern Guinea Savanna	National Park/ Game Reserve
Benin/ Burkina Faso	Pendjari	11°12′N, 1°09′E	6.1.90	1	Northern Guinea Savanna	National Park/ Game Reserve
Benin/ Burkina Faso	Pendjari	11°13′N, 1°09′E	24.1.89	4	Northern Guinea Savanna	National Park/ Game Reserve
Benin/ Burkina Faso	Pendjari	11°18′N, 1°18′E	24.1.89	3	Northern Guinea Savanna	National Park/ Game Reserve
Benin	Pendjari	11°12′N, 1°47′E	25.1.89	2	Northern Guinea Savanna	National Park
Benin	Mekrou	11°35′N, 2°20′E	1.12.87	1	Northern Guinea Savanna	National Park/ Wilderness
Benin/ Burkina Faso	Mekrou	11°41′N, 2°20′E	25.1.89	3	Northern Guinea Savanna	National Park
Benin/Niger	Mekrou	12°15′N, 2°26′E	25.1.89	2	Northern Guinea Savanna	National Park

*Reported in Grimes (1987)
**Observation made on the ground

Discussion

Table 1 includes the first published records of Black Storks occurring in the territories of Ivory Coast, Burkina Faso, Togo, Benin and Niger, and adds substantially to the data for Ghana (Grimes 1987).

TABLE 2
Seasonal distribution of Black Storks seen from helicopters

Month	Hours flown	Sightings	Number of birds	Sightings/10 flight hrs	Birds/10 flight hrs
July/Aug	184	0	—	—	—
September	75	0	—	—	—
October	74	1	4	0.14	0.54
November	40	2	10	0.50	2.50
December	18	1	1	0.56	0.56
January	84	15	40	1.79	4.76
February	93	9	18	0.97	1.94
March	27	3	9	1.11	3.33
April	59	0	—	—	—

Most of the 25 localities from which Black Storks were recorded during helicopter flights lie within a narrow latitudinal band, 9°30′N to 11°30′N, though flights covered the area from 7°30′N to 12°30′N. Published records from Nigeria also fall predominantly into the narrow band. This suggests that the map in Brown *et al.* (1982) is not very accurate.

The observations of Black Storks in both the Mauritanian (Browne 1982) and Senegalese (Roux 1973, Morel & Roux 1973) sections of the Senegal river delta (*c.* 16°20′N to 16°30′N, and west of 16°W) strongly suggest that birds crossing the Mediterranean at Gibraltar are involved. These are probably of the Iberian breeding population, at least part of which migrates (Cramp & Simmons 1977). However, movements of 121 Black Storks over the Pyrenees in 1986 and an estimated 200 passing through France in autumn 1987 (‘European News’, *British Birds* (1987) 80: 322, and (1988) 81: 331) indicate that non-Iberian birds, of unknown provenance, are involved. Records of Black Storks from further east in West Africa are more problematical, but October sightings from Ghana (Table 1) and Nigeria (Crick & Marshall 1981) suggest a broad-front crossing of the Mediterranean, and a direct crossing of the Sahara, as reported by Brown *et al.* (1982), rather than infiltration from the Sudan of birds which have passed through the Levant.

Sites in the Black Volta and Pendjari valleys provide records from consecutive seasons, while the lower Koumongou valley had a pair of storks in early 1988 and early 1990, though none were seen there during several survey flights in 1989. The Sissili/Kulpawn area was inhabited in three consecutive seasons, from 1987 to 1989, though sightings were from different localities. There is little doubt that this area and the Pendjari valley are the most important wintering sites for Black Storks in the area studied.

Although flights were not planned with stork surveys in mind, there was adequate coverage, with the unfortunate exception of December, to establish the seasonal pattern (Table 2). It is clear from Tables 1 and 2 that Black Storks reached the surveyed zone rather late in the year, with the first sighting on 25 October. Numbers built up at the turn of the year (perhaps in December) and all birds had departed by the end of March,

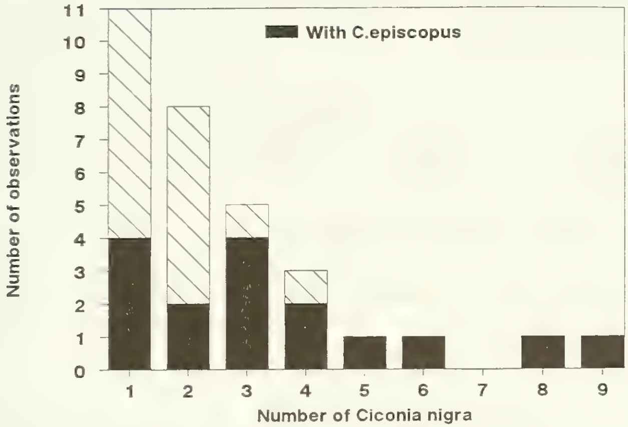

Figure 1. Group size of *Ciconia nigra* and association with *Ciconia episcopus*.

the latest sighting being the ground observation on 17 March in Togo, though there is a record of a single bird on 6 April in NW Nigeria (Walsh 1968). There was clear evidence of wintering at one site in the Pendjari valley, with storks present on 16 November 1988 and 11 and 24 January 1989, while at a site in the White Volta valley storks were present in both January and March 1989. Furthermore, the seasonal data, in general, support the view that Black Storks are wintering in the area, rather than passing through. Also it is most unlikely that any Black Storks spent the summer in the regularly surveyed areas of Ghana, Togo and Benin. The late arrival in the wintering zone could have been owing to a slow movement southwards through the Sahel and Sudan Savanna zones as conditions deteriorated, or to a slow diffusion westwards of birds which entered Africa via the Levant. However, there are no observations from Mali and Niger to support the former idea and the latter seems unlikely given that the easternmost records were not noticeably earlier than those from the west.

Black Storks occurred in very small parties (from one to nine birds) with only four of 32 records involving more than four birds (Fig. 1). It is likely that they move in pairs, or family parties, though individuals from the same Danish brood have been reported migrating in different directions (Brown *et al.* 1982).

In half the observations Black Storks were associated with Woolly-necked Storks. This is the commonest stork in well wooded parts of the West African savanna belt and appears to have similar habitat requirements to the Black Stork. The largest flock of Black Storks, nine birds, was accompanied by two Woolly-necked Storks, suggesting that the tendency to associate is mutual.

Almost all sightings were from medium-sized savanna rivers with well developed gallery forest, flowing through uncut Northern Guinea and Sudan Savanna woodland. The only notable exception, from which there were several records, was the White Volta valley in Ghana. This is a large, open sandy river, lacking gallery forest. It is also striking that the upper Oti valley in Togo, which is noted for other species of storks, including the White Stork *C. ciconia*, and for the Crowned Crane *Balearica pavonina*, yielded only a single record of the Black Stork, though it was frequently surveyed. This section of the valley is open and lacking gallery forest. Upstream, in Benin where the river becomes the Pendjari, Black Storks again occur regularly in areas where there is well developed riparian woodland.

The disturbing effects of the passage of the helicopter prevented any meaningful observation of stork behaviour. Many birds were already airborne when first seen but others were flushed from riverside trees, sandbanks and small marshes, along with their associates. Probably the majority were at diurnal roosts.

Most of the Black Storks were seen in National Parks or Game Reserves, or in adjacent wilderness areas (Table 1), where vegetation was relatively unscathed. However, the White Volta valley is relatively densely populated, and degraded. Although the important Sissili/Kulpawn area is largely uninhabited at present there are plans for a major rural development programme which will rapidly reduce its suitability for Black Storks.

In general, however, the wintering zone which is referred to here has within it a sufficient chain of National Parks and Game Reserves. Although in most cases these reserved areas are poorly managed and under-protected, at present they maintain reasonable levels of tree cover, and especially of gallery forests. Therefore, it seems that the Black Stork is safe enough in many of its West African wintering sites, providing it can reach them unaffected by the severity of conditions in the Sahel and unmolested by man, especially in the Mediterranean basin.

Acknowledgements

The stork counts could not have been successfully carried out without the cooperation and great skill of the pilots of Evergreen Helicopters Inc., McMinnville, Oregon, U.S.A. Drs R. A. Cheke and J. Grunewald and Mr M. Jones kindly helped with references, Mrs B. Walsh checked the final version and Mr Paul Ohemeng kindly prepared the typescript.

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The Asian Gull-billed Tern *Sterna nilotica affinis* in Australia

by Richard Schodde

Received 27 February 1991

Until 1977, the only form of the Gull-billed Tern known from Australia was the endemic, heavy-billed and whitish-backed subspecies, *Sterna nilotica macrotarsa* Gould (Peters 1934, Condon 1975). In that year Johnstone (1977) recorded the first specimen of the smaller, east Asian subspecies, *S. n. affinis* Horsfield. It was a bird collected from a group of four at the mouth of the Lawley River, Kimberley Division, in north-western Australia in mid-October 1976. Despite no confirmed records since (*cf.* McKean 1981), there are, however, two other concurrent records of single specimens taken on the estuaries of the East and South Alligator Rivers, Arnhem Land, in early February 1973 and early October 1974 respectively (Fig. 1). These specimens are lodged in the Australian National Wildlife Collection, CSIRO, Canberra.

Both are females in non-breeding plumage, with plain greyish-white crowns and lores (faintly shaft-streaked with black on the immature) and well-defined but narrow black lines through the eyes to over the ear coverts. One bird (5 February 1973) was adult with a convoluted oviduct, and fresh, moulting silvered remiges, and the other (10 October 1974) immature in apparently first-year non-breeding (winter) plumage with straight oviduct and worn, dusky remiges. Ovaries were regressed. The measurements of the specimens are, in mm: ANWC 6040 adult female—flattened wing 260 (in moult), tail 112, tarsus 31.3, exposed culmen 36.2, depth of bill at feather line 12.0; ANWC 17715 immature female—flattened wing 307, tail 122, tarsus 28.5, exposed culmen 36.7, depth of bill at feather line 10.2.

In comparison with endemic Australian *macrotarsa*, the two Alligator River specimens are paler on the crown and less streaked in non-breeding

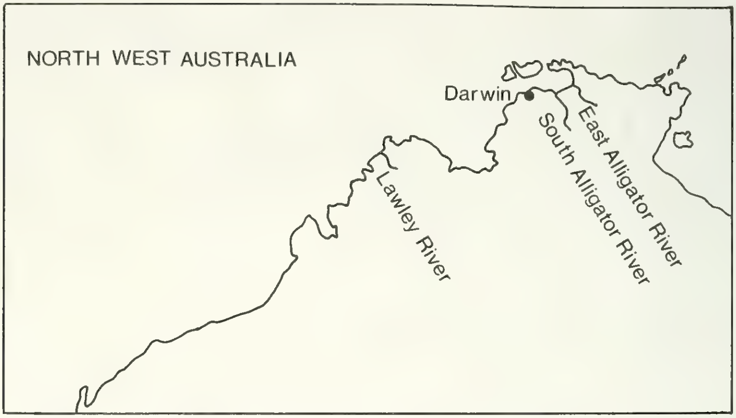

Figure 1. Localities for records of Asian Gull-billed Terns in Australia.

or immature plumage. Otherwise they match Asian *affinis* in their distinctly steel-grey dorsum and upper tails, small size, fine bills and short tarsi (*cf*. Roselaar in Cramp & Simmons 1975: 16–17). Based on 11 adult males and 10 females examined from Australian museums, *macrotarsa* is much paler whitish-grey over the back and wing coverts, almost snow-white on the tail, larger (flattened wing ♂♂ 304–344, ♀♀ 302–348 mm), heavier in bill (exposed culmen ♂♂ 42–47, ♀♀ 39–43 mm, depth of bills at feather line ♂♂ 12.8–15.0, ♀♀ 12.8–14.1 mm), and longer in foot (tarsus ♂♂ 34–38, ♀♀ 32–37 mm); *cf*. measurements of *affinis* and nominotypical *nilotica* given by Roselaar (*loc. cit*.).

These records and those of McKean (1981) lend support to the suggestion of Johnstone (1977) that *S.n. affinis* reaches the tidal waters and estuaries of northwestern Australia frequently during the austral summer. During a CSIRO faunal survey of the Alligator Rivers region between 1971 and 1974, small, white-crowned Gull-billed Terns matching *affinis* were recorded commonly between October and April, suggesting that it is a regular wintering migrant. The terns were solitary, quartering the saline or brackish lower estuaries of the Alligator Rivers up to 15 km inland and diving from great heights (often 100 m) to take small fish and crustacea. In contrast, endemic Australian *macrotarsa* also reaches the region on non-breeding dispersal but mainly though not exclusively in the intervening period, May–November (*cf*. McKean 1981). Around the Alligator Rivers it was found foraging only over freshwater swamps, billabongs and flooded plains further inland to take aquatic insects as much as fish and crustacea. Data on diet were gathered from the stomachs of collected specimens (2 *S.n. affinis*, 1 *S.n. macrotarsa*) and field observation.

Generic allocation follows Sibley & Monroe (1990).

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The generic status of Roberts' Prinia of the south-eastern Afrotropics

by P. A. Clancey

Received 14 March 1991

In the course of dealing with the Afrotropical elements of the *Prinia* coterie of small long-tailed warblers, Hall & Moreau (1970) remark (on p. 175) that "a number of atypical species are currently included in the genus which so broaden the conception of it that it is difficult to name any character on which *Prinia* (*sensu lato*) may be distinguished from *Apalis*. . . . Detailed study is called for as a basis for reconsidering the generic limits." Two of the forms singled out as atypical of *Prinia* spp. in general are southern African endemics, namely *"P." substriata* and *"P." robertsi*, distinguishable from current congeners in *Prinia* on the basis of their thin bills and widely differing tail-profiles. One of these atypical species has already been the subject of a detailed study, with the resultant placing of *substriata* in a new monotypic genus, *Phragmacia* (Brooke & Dean 1990; see also Clancey 1991). In the present study consideration is given to the second species concerned, *Prinia robertsi* Benson, 1946.

While initially described and currently treated as a species of *Prinia*, the generic status of Roberts' Prinia has for long been subject to doubt. It is a highly localized species, which affects edge situations on the outskirts of montane forest and clumps of bracken-briar at elevations of >1200 m a.s.l. While occurring in pairs during the breeding season it is gregarious at other times, when feeding birds disposed at ground level in low screening cover will periodically join forces in giving voice to a collective churring chorus, reminiscent of the vocalization of some babblers *Turdoides* spp. Lacking distinctive field characters, it was for long confused with the Tawny-flanked Prinia *P. subflava*. Benson (1946a) noted that his new species *P. robertsi* had only 8 rectrices; this was later queried by Chapin (1946), who noted that in two specimens of *robertsi* presented to the American Museum of Natural History, New York, the species seemingly had a complement of 10 rectrices. In a recent note on the question of the number of tail-feathers in *robertsi*, Irwin (1989) believed that Chapin miscounted the tail-feathers, as some 60 specimens in the collection of the Natural History Museum in Bulawayo and a further 20 in the Durban Natural Science Museum showed incontrovertibly that *robertsi* has a consistent rectricial count of 8 quills only. In the other austral African warblers currently grouped in *Prinia* Horsfield, 1821 (type-species *Prinia familiaris* Horsfield), the rectricial complement is 10 in *P. subflava, P. flavicans, P. maculosa* and *P. hypoxantha* (see Clancey 1989). In the case of the so-called Rufous-eared Warbler, often relegated to *Prinia* by conservative workers, current opinion inclines to favour adoption of its placement as a sole member of *Malcorus* Smith, 1829, as argued by Maclean (1974), and treatment as *Malcorus pectoralis* Smith on removal from *Prinia*. In *Malcorus*, the rectrices number 12, as opposed to 10 in the new genus *Phragmacia* proposed by Brooke & Dean (1990) for *Drymoica substriata* Smith, 1842, a further southern African endemic warbler confined to the Karoo biome sector of the South West Arid Zone. As far as can be assessed rectricial number is consistent, making due allowance for moult and feather loss through shot damage, in taxonomically relevant complexes of warblers in the Afrotropics. Comparing the situation presented by the low tail-feather complement of 8 in *P. robertsi* with that of all other southern African sylviids (some 60 breeding species), we find that in the more advanced warblers the tail-feather count is 12 and in all others apart from *robertsi* 10.

Roberts' Prinia closely resembles *P. substriata* in its tail profile, which is abruptly stepped rather than evenly graduated, the outermost rectrix averaging 38.1 mm, the longest (innermost) 61.4 mm. The other tail-feathers are closer in length to the innermost pair than in typical *Prinia* spp., in this not sharply dissimilar to what is found in *substriata*, in which the equivalent measurements are 42.0 and 69.7 mm (Table 1). The latter also lacks a dark subterminal tail-bar, which is such a feature of typical prinias. The rectrices in *robertsi* are, in addition, appreciably narrower than those of *substriata*.

In the stepped and close grouping of rectrices 2–5 the southern African endemics (*robertsi* and *substriata*) stand apart from other Afrotropical prinia-like species and are probably relicts of early warbler radiations without extant relatives either to the north or south of the Zambezi. As will be appreciated from Table 1, other southern African and relevant extra-limital species have tail profiles which are more or less evenly graduated. The disparity in tail-feather number (8 in *robertsi*, 10 in *substriata*) precludes these two endemics from being viewed as deriving from the same ancestral source, favouring their grouping in separate monotypic genera. Brooke & Dean show that nest architecture and egg colouration in *substriata* differ widely from those of typical *Prinia* spp., whereas in Roberts' Prinia the nest and eggs (Benson 1946a, Manson & Manson 1980) are perhaps not sufficiently different from those of many prinias to warrant their usage as criteria of generic relevance. While *robertsi* is not generically separable from typical prinias on what is known of its breeding biology, it is so on the basis of tail form and number of rectrices, whereas the Namaqua Warbler (*substriata*) is separable on both breeding biology and tail profile, but not on number of rectrices.

TABLE 1
Mensural data (means, mm) of Afrotropical Prinias and some associated long-tailed warblers (males only)

Species	n	Wing	Culmen	Tarsus	Tail R1	Tail R4–6	Difference
8 rectrices							
Oreophilais robertsi	10	50.3	14.8	23.1	38.1	61.4	23.3
10 rectrices							
Prinia subflava	10	50.2	14.0	21.4	28.4	70.6	42.2
Prinia somalica	2	49.5, 50	14.0	19, 20	34, 37	57.5, 61	—
Prinia flavicans	10	54.3	14.1	21.3	39.4	86.6	47.4
Prinia hypoxantha	10	53.8	14.5	23.2	33.6	78.6	45.0
Prinia maculosa	10	52.9	13.8	21.5	37.2	72.7	35.3
Herpystera bairdii	3	54.3	15.8	24.0	15.8	62.7	46.9
Schistolais leucopogon	3	58.0	14.5	25.0	30.6	60.6	30.0
Phragmacia substriata	10	55.5	15.2	20.9	42.0	69.7	27.7
12 rectrices							
Heliolais erythroptera	10	51.7	17.3	22.1	34.7	64.6	29.9

Notes. Relevant African species with tails of 10 rectrices which were not examined are as follows: *Prinia fluviatilis* Chappuis, 1974; *Prinia molleri* Bocage, 1887; ?*Prinia leontica* Bates, 1930 (treated as a member of the genus *Schistolais* by Wolters (1980)), and *Urolais epichlora* (Reichenow, 1881).

The Rufous-eared Warbler *Malcorus pectoralis* Smith, 1829, which is often viewed as a species of *Prinia*, as by Traylor (1986), has a tail of 12 rectrices and the dorsal surfaces boldly streaked. The nest architecture has also been shown to differ from that of true prinias (use of dead and not green grass blades and stalks) by Maclean (1974).

The reduction between the outermost tail-feather (rectrix 1) and the innermost in (r5) *Phragmacia substriata* and (r4) *Oreophilais robertsi* to below 28 mm reflects the less graduated tail-profile in these two austral African endemics, which are without extant relatives. The two males of *Prinia somalica* available appeared to be in breeding dress, and were not strictly comparable with the other material measured, all of which was in freshly moulted non-breeding condition.

Other points of moment in determining the generic status of *robertsi* are that its voice differs widely from that of prinias (see sonagrams in Maclean 1985), and that it is strongly gregarious when not breeding, moving about in low scrub in sporadically vociferous parties. Also, apart from the moulting in of a minimally shorter tail, it does not assume a marked seasonal mode of dress in response to the onset of nidification. A shortening of the length of the tail in such warblers as prinias and cisticolas is a correlate of the constructing of a compact enclosed nest with a lateral entrance.

While some non-passerines of ancient lineage exhibit a measure of individual variation in the number of tail-feathers, the rectricial complement in the case of passerines is in the main consistent in both genera and species. This is true for the Sylviidae, except in the case of *Apalis pulchra* Sharpe, which has only ten rectrices as against twelve in other *Apalis* forms (see Bannerman 1930) and in other assemblages of advanced warblers of such genera as *Sylvia, Parisoma, Phylloscopus, Cisticola*, etc. From this it is postulated that in long-tailed forms—as in the case of *Prinia*—evolutionary selection has not favoured an increment of the rectricial count from ten to twelve and the parallel adoption of an apalis-like plumage facies and breeding biology. In the case of *A. pulchra*, plumage and tail-length (wing and tail are about equal in length) are concordant with those of typical *Apalis* spp., the retention of a ten-quilled tail in effect a symplesiomorphy (primitive similarity—with *Prinia* spp.). In warblers such as *Prinia* and *Camaroptera* spp., most of which habitually cock the tail at right angles to the back when excited, the tail-feather number is here interpreted as of particular evolutionary import. The existence of a lone species with an eight-quilled tail, namely Roberts' Prinia, furnishes what is in effect an example of evolutionary retardation involving a single variable. This species is unique in the Afrotropics in being the only sylviid with eight rectrices, and, as has been shown here, a shift through the ten-quilled tail facies of *Prinia* spp. and some allied forms to a complement of twelve in the more advanced ones, suggests that a tail of only eight rectrices represents a relict early stage in warbler evolution. The case is in some ways analogous to that of *A. pulchra* mentioned earlier, in which the warbler complexes of *Prinia* and *Apalis* spp. are seen to merge in respect of a single character.

In the circumstances, the relegation of Benson's *P. robertsi* to a new monotypic genus appears to be justified.

Oreophilais gen. nov.

Type species. Prinia robertsi Benson, *Bull. Brit. Orn. Cl.* 66(1946): 52.

Diagnosis. Differs from *Prinia* spp. (see below) in having a rectricial complement of eight as against ten quills, the tail profile more stepped than graduated, with the outermost feather separated from the tip of the inner (rectrix 4) by *c*. 23 mm. Rectrices 2–4 somewhat clustered apically. Tail-feathers narrow and completely unpatterned. Seasonal dress change associated with breeding minimal. Eye-colour in adult pale yellow.

Status. Monotypic, the single species *Oreophilais robertsi* presumably relict and without known extant relatives; confined to the frontier highlands of eastern Zimbabwe and southern Mozambique at >1200 m a.s.l.

Etymology. *Oreophil-*, Greek, mountain-loving. The *lais* component of the name, elided with the first part, derives from part of the Greek *hypolais*, which refers to a small warbler-like passerine and has been employed in the formation of several warbler genera. It has also been used as a specific name for the Wailing Cisticola *Cisticola lais* (Finsch & Hartlaub), and figures as a synonym of the Red-breasted Flycatcher *Ficedula parva*.

English name. With the removal of *robertsi* from the genus *Prinia* a change in the vernacular name of the species seems desirable. To meet this need I propose Briar Warbler in allusion to the bracken-briar habitat affected by this montane endemic warbler.

Data assembled during the course of recent research on prinia-like species, which may be found to be helpful in further work on the generic placing of other contentiously classified African sylviids, are given below under the appropriate generic connotation:

Prinia Horsfield, 1821: type-species *Prinia familiaris* Horsfield. Tail of 10 rectrices and steeply graduated, the tail-feathers of variable width, with light tip and pronounced brownish or blackish sub-terminal spot or complete bar. Seasonal plumage change associated with breeding results in darker upper-parts and a marked reduction in tail-length. Eight Afrotropical species, others in southern Palaearctic and Indomalaya.

Herpystera Sundevall, 1872: type-species *Drymoica bairdii* Cassin. Tail of 10 rectrices and more steeply graduated than in last. Bill basally coarser and broader than in *Prinia* spp., and brownish-black upper-parts and wings, the latter spotted with white, and heavily melanized and banded ventral surface distinctive. Monotypic. Recognized by Wolters (1980) but not by Traylor (1985).

Urolais Alexander, 1903: type-species *Urolais mariae* Alexander. Tail of 10 rectrices, the innermost pair greatly extended beyond the rest, especially in nominate race of *U. epichlora*. Dorsally and over wings yellowish-olivaceous. Monotypic. Recognised by Traylor and treated as a synonym of *Prinia* by Wolters.

Schistolais Wolters, 1980: type-species *Drymoeca leucopogon* Cabanis, 1875. Tail of 10 rectrices, graduated and only marginally (< 6 mm) longer than wing. Rectrices relatively broad and sharply pointed and completely unpatterned. Bill robust. Plumage bluish-grey, with dark cap and distinctive white throat. Monotypic? Wolters (1980) includes *P. leontica* in *Schistolais* in line with a comment by White (1960), whereas Traylor does not recognise the genus and leaves *leontica* in *Prinia*.

Phragmacia Brooke & Dean, 1990: type-species *Drymoica substriata* Smith. Tail of 10 rectrices, the feathers unpatterned and the profile more stepped than graduated, with rectrices 2–5 somewhat apically clustered. Bill relatively long and slender. No seasonal change of dress associated with nidification. Breeding biology separates *Phragmacia* from *Prinia* and allied genera; nest an open cup in riverine herbage or flood debris, and eggs distinctive. Monotypic, with the lone species relict and without extant relatives.

Heliolais Sharpe, 1903: type-species *Dybowskia kemoensis* Oustalet = *Drymoica erythroptera* Jardine. Tail of 12 rectrices, graduated and strongly patterned. Bill more robust than any of the foregoing, slightly decurved and the culmen markedly arched. Chestnut colour of wings distinctive, and assumption of grey dorsal surface in breeding plumage change sets it apart. Monotypic, without close relatives.

Acknowledgement

For assistance with the loan of material I am grateful to P. R. Colston of the British Museum (Natural History), Tring.

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Remarks on the fossil record and suprageneric nomenclature of barbets (Aves: Ramphastidae)

by Storrs L. Olson

Received 18 March 1991

Prum (1988), in expanding on Burton's (1984) observation that the divergence of toucans occurred *within* the family of barbets (Capitonidae), provided a convincing case for including these groups in the same family-level taxon, the name Ramphastidae having priority. In their osteological studies of the Pici, both Prum (1988) and Simpson & Cracraft (1981) emphasized cranial characters at the expense of postcranial ones, which might still be investigated profitably. For example, toucans and barbets share a highly distinctive, presumably derived, morphology of the coracoid that is not found in other members of the Pici. Here, however, I would call attention to errors of interpretation by Prum (1988) in the fossil record and biogeography of barbets, and to errors in nomenclature of subfamilies and tribes that he either introduced or perpetuated.

The taxonomic status of the fossil genus *Capitonides*

Ballmann (1969a) described a new genus and species of barbet, *Capitonides europaeus*, from a carpometacarpus from a mid-Miocene fissure-fill in Bavaria. He referred a tarsometatarsus and humerus from the same site to "*Capitonides* sp.". A carpometacarpus from the Miocene at Grive-Saint-Alban, France, was assigned only to the Capitonidae and was considered to belong to a species more similar to living barbets than was *Capitonides* (Ballmann (1969b).

In the original description, Ballmann (1969a) stated that he had no skeletons of the modern genus *Trachyphonus* for comparison but he considered it unlikely that *Capitonides* would prove to be like any living genus. Later, Ballmann (1983) described *Capitonides protractus* from a humerus, ulna, carpometacarpus and tarsometatarsus from the middle Miocene Nördlinger Ries of southern Germany. At this time he realized that *C. protractus* was actually quite closely related to the living African genus *Trachyphonus*, which he found to be osteologically primitive and quite distinct from other barbets, a fact that may have influenced his original assessment that *Capitonides* would not prove to be similar to living genera.

Once he discovered their similarity to one another, however, Ballmann (1983) did not discuss such characters as might separate *Capitonides* from *Trachyphonus*, except to note that the former supposedly had a "relatively shorter" carpometacarpus. Whereas the proportions in *Capitonides* seem rather different from those of other genera of barbets (Ballmann 1983, Table 1), *Capitonides* (carpometacarpus 46.2% of humerus length) shows negligible difference from *Trachyphonus* (47.2–49.2%). In comparing Ballmann's illustrations with modern specimens, I see nothing that will distinguish these fossils from *Trachyphonus*.

Ballmann's (1983: 48) only biogeographical or paleoecological conclusion was that "a barbet indicates that the winters must have been mild enough to allow the growth of evergreen vegetation with fruits or berries during the whole year". This is an interesting but unexceptional conclusion that is consonant with other paleontological evidence and only requires that the fossils in question be of a barbet.

Prum (1988) criticised Ballmann's association of *Capitonides* with the Capitonidae and with *Trachyphonus* as being based partially on primitive characters. This confuses phylogeny reconstruction with the process of identification, which involves assessment of the sum of all characters, regardless of polarity. If *Trachyphonus* differs from other barbets by the retention of primitive characters, and the fossils possess these same characters and are otherwise not significantly different from *Trachyphonus*, what basis is there for identifying the fossils as anything other than barbets related to *Trachyphonus*?

Prum (1988) seized on a single character in one of Ballmann's (1983) line drawings, the supposed single instead of double canal in the hypotarsus of the tarsometatarsus of *Capitonides protractus*, as showing that this taxon was the sister-group of the entire suborder Pici. As a consequence, he erected a new family Capitonididae for the genus *Capitonides* (despite the fact that the type species, *C. europaeus*, is known only from a carpometacarpus and cannot be ascertained as having possessed the only character ascribed to the family). He further considered that no paleoecological inferences could be drawn from these fossils because they could not be shown to be barbets.

The erection of a new family based on a single such character is bad enough, but to do so without verifying that Ballmann's drawing was accurate or that this character was not attributable to breakage in the fossil is certainly not the best procedure. Nor was any consideration given to the possible ontogenetic or phylogenetic development of this character, or the amount of variation among individuals.

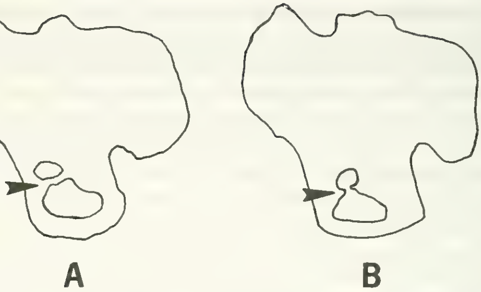

Figure 1. Proximal view of right tarsometatarsi in two species of toucans (Ramphastinae) to show individual variation in ossification of the small septum (arrows) dividing the hypotarsal loop enclosing the flexor tendons: A, *Andigena nigrirostris* USNM 428774; B, *A. hypoglauca* USNM 428789. The presence or absence of this septum determines whether there are one or two hypotarsal canals, but changes neither the number nor placement of the flexor tendons.

We are not talking here about the development of some significant evolutionary novelty. The change from a single to a double hypotarsal canal does not involve the addition of a new canal or the displacement of flexor tendons, but nothing more than the ossification of a septum between two already discrete portions of the original single canal (Fig. 1). Perhaps all members of the Pici progress from the single to the double condition during their ontogeny by such ossification, which in turn may have taken place several times during the phylogeny of the Pici. Very little searching among modern skeletons was needed to find an example within the Pici (an individual of the toucan *Andigena hypoglauca*) in which this ossified septum was lacking, leaving it with a single hypotarsal canal (Fig. 1). This character probably has little or no phylogenetic significance. If it really is present in *Capitonides protractus*, which, after all, is more than 15 million years old, why should this not simply be regarded as a minor primitive condition? If so, it would certainly not provide a basis for the creation of a new family.

Capitonides protractus appears to be referable to the modern genus *Trachyphonus*, and the type species, *C. europaeus*, may be as well. I reject the name Capitonididae Prum, 1988, as a junior synonym of Ramphastidae Vigors, 1825, in the newly expanded sense, and as a junior synonym of Capitonidae Bonaparte, 1846, in the traditional sense. Because *Capitonides* and *Trachyphonus* surely belong to the same subfamilial group, if not the same genus, as first revisor I regard Trachyphoninae Prum, 1988, as taking precedence over Capitonididae Prum, 1988.

Suprageneric nomenclature

Prum's (1988) classification resulted in the recognition of 10 suprageneric taxa within the expanded family Ramphastidae, of which 7 were proposed as new. Three of these names, one of which does not have Prum's authorship, are grammatically incorrect. There already exist well-known avian family-group names with the stems *bucco* (Bucconidae) and *ornis* (e.g. Threskiornithidae) to serve as models. The first use of Megalaiminae is traceable to Sundevall (1873: 75, where spelled Megalaeminae). Erroneous renderings in Prum (1988) and their corrections are listed below:

Erroneous	Grammatically correct
Gymnobuccini	**Gymnobucconini**
Megalaiminae	**Megalaimatinae**
Semnorninae	**Semnornithinae.**

Acknowledgements

I thank George Steyskal for verifying the suprageneric emendations above, and Lester L. Short and David W. Steadman for comments on the manuscript.

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Sexual dimorphism in Meller's Duck *Anas melleri*

by Glyn Young

Received 12 February 1991

First described in 1864, Meller's Duck *Anas melleri* has generally been considered to have similar sexes (Sclater 1864, Hubbard 1907, Phillips 1922, Delacour 1956, Johnsgard 1978), although Darby (1978) and Madge & Burn (1988) have suggested that males may be darker than females and Todd (1979) that males have brighter legs and feet. Like other members of the genus, both sexes have their own calls; see Johnsgard (1978).

Anas melleri is poorly known in Madagascar (where it is endemic) and very few specimens have been held in captivity. The species is also poorly represented in museums; thus there are only 13 skins, collected in

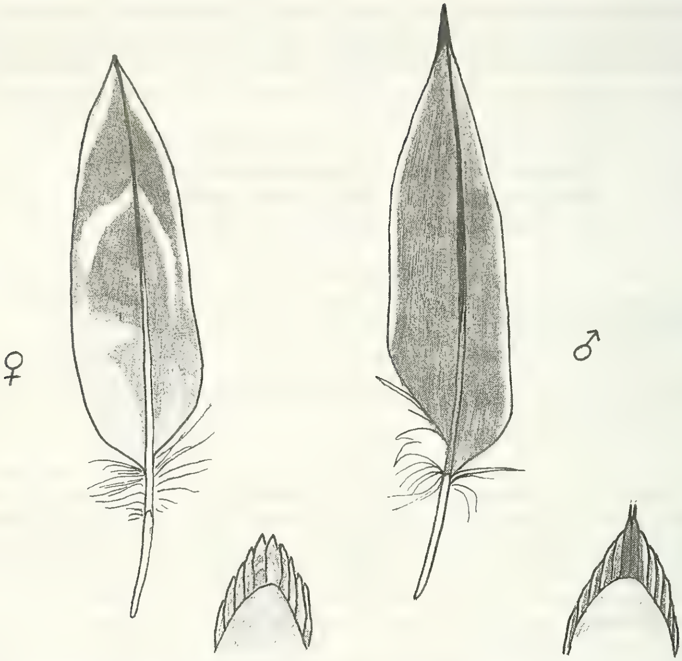

Figure 1. One central tail feather of Meller's Duck *Anas melleri*, and appearance of tail in resting bird, female (left) and male (right).

Madagascar, at the British Museum (Natural History) (BMNH). Live birds arrived at the Jersey Wildlife Preservation Trust (JWPT) in 1977 from the introduced population on Mauritius (Darby 1978). Observation of these birds has shown a number of clear, but not especially conspicuous, differences between the sexes.

The species has drab plumage but shows a degree of individual variation. The edges of the breast and neck feathers of a few females are pale brown which, with their darker centres, give a striped appearance. In other females and in all males the darker edges of the feathers produce a more uniform reddish brown colouration.

Leg and foot colour are also not constant. Bright orange legs and feet are a feature of some adult males, while in some females and juveniles the colour may be duller with dark webbing. This, however, appears quite variable within the captive population.

Birds can be sexed at close range and with practice in the field by careful observation of the tails. The two central tail feathers of the male have extended tips which may protrude a short distance beyond the remainder of the tail (Fig. 1) and in older birds may also protrude upwards. These central feathers are all-black and contrast with the reddish-brown edges of the remaining tail feathers.

The tail feathers of the female are all brown-edged and identical at their tips. The male usually holds his tail with the feathers tight, the dark

TABLE 1
Morphometrics (mm) of *Anas melleri*

		Sex	n	Range	Mean	SD
Phillips (1922)	Culmen	♂			58	
	Wing	♂		240–260		
	Tarsus	♂		38–45		
Delacour (1956)	Culmen	♂		58–62		
		♀		52–58		
	Wing	♂		245–260		
		♀		241–253		
	Tarsus	♂		42–45		
BMNH	Culmen	♂	7	57–62	58.9	1.68
		♀	5	54–57.5	55.8	1.34
JWPT	Culmen	♂	25	57–65.5	60.8	1.71
		♀	26	54–60	56.9	1.53
	Wing	♂	25	245–269	261.3	6.96
		♀	21	240–256	248.3	4.76
	Tarsus	♂	20	40.5–49.5	45.7	2.07
		♀	15	38–48.5	42.5	2.51
Average weights (g)		♂	19	883–1240	1009.8	99.8
(see text)		♀	21	831.5–1140	910.7	66.6

TABLE 2
Head and bill length (mm) of *Anas melleri*

	Sex	n	Range	Mean	SD
BMNH	♂	7	123–131	124.6	3.38
	♀	5	113–118	115.3	1.89
JWPT	♂	20	118–127	121.9	2.23
	♀	20	111–116	113.1	1.62

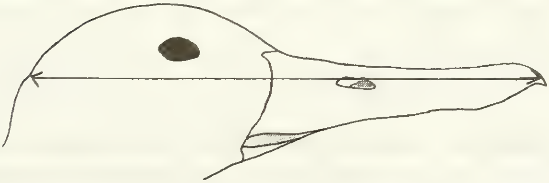

Figure 2. Length of head and bill of Meller's Duck *Anas melleri*.

central pair appearing prominent. The female even at rest may hold her tail feathers loosely, giving a jagged appearance.

Male *A. melleri* are generally larger than females but overlaps are seen in all previously recorded dimensions (see Table 1). No weights have previously been published. The weights of captive birds show a great seasonal range, so those given in Table 1 are based on average weights for individual birds.

The bill of *A. melleri* is long and thin, a diagnostic feature of the species, and in the field that of the male appears longer than that of the female. Investigation of captive birds at JWPT (Table 2) shows that the length of the head and bill of the male is significantly greater than that of the female ($t = 11.965$, d.f. $= 38$, $P < 0.01$), giving this long-billed appearance. This was also found in 12 specimens measured at the BMNH ($t = 3.224$, d.f. $= 10$, $P < 0.01$; Table 2).

Specimens in the hand may be sexed by determining skull length by measuring, with calipers, the distance between bill-tip and the back of the head (Fig. 2). This method removes the need to use the intrusive technique of cloacal examination (see Hochbaum 1974 for description), and can be done swiftly with pre-set calipers.

With experience, individual Meller's Ducks can be sexed easily at close range and with little trouble in the field.

Acknowledgements

I wish to thank David Jeggo and Dr Anna Feistner of the Jersey Wildlife Preservation Trust, Dr Janet Kear and Jonathan Smith of the Wildfowl and Wetlands Trust, and M. P. Walters of the British Museum (Natural History), Tring.

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The specific characters of the Slender-tailed Cisticola *Cisticola melanura* (Cabanis)

by M. P. S. Irwin

Received 18 February 1991

The Slender-tailed Cisticola* *Cisticola melanura* is endemic to miombo (*Brachystegia*) woodland and restricted to a very limited area within this biome, in northeastern Angola and southwestern Zaïre. It is apparently rare everywhere, and its range is highly disjunct and fragmented. It was first described from northern Angola without precise locality by Cabanis (1882), *J. Orn.* 30: 349) as *Dryodromas melanura*; later a similar bird from the Lufupa River, Katanga, was described by Neave (1909, *Ann. Mag. Nat. Hist.*, ser. 8, 4: 130) as *Dryodromas pearsoni*. Chapin (1953) first suggested that they were conspecific, and White (1962) placed *pearsoni* in the synonymy of *melanura*. The species remains known from only 13 or 14 specimens from 5 or 6 localities, in rich, apparently undifferentiated savanna woodland. It has never been studied in life and the little that is known about it comes from the observations of collectors. Its generic affinities have also been the subject of some disagreement and it has on occasion been incorrectly placed in the genus *Apalis* (Hall & Moreau 1970, Mackworth-Praed & Grant 1963), but the bill is very typical of the genus *Cisticola* and quite unlike any *Apalis* (Irwin 1990; see also Chapin 1953). A measure of doubt has even been cast on its status as a distinct species. Dowsett & Dowsett-Lemaire (1980), discussing the relationships of the Short-tailed Neddicky *C. fulvicapilla* and the Long-tailed Neddicky *C. angusticauda* which they regarded as conspecific, went on to suggest that the bird called *Apalis melanura* by Hall & Moreau (1970), and also known as *Cisticola pearsoni*, will in time be found to be conspecific with *C. fulvicapilla* as it is very like the apparently allopatric but ecologically similar *angusticauda*. It was with this suggestion in mind, and in the preparation of the species texts for Volume 5 of *The Birds of Africa*, that the present investigation was undertaken. The known material of *C. melanura* is listed in Table 1.

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*This bird does not have a well-established common name and Black-tailed Cisticola would seem more appropriate in view of the all-black tail.

The characters of *Cisticola melanura*

Of the total of 14 study skins, I have personally examined 5 in Tring, 7 others have been examined on my behalf by others, and 2 were inaccessible. The descriptions which follow are based on the material at Tring. On first examination the reddish crown, duller reddish-brown mantle, greyish-brown wings and tail with long and narrow black rectrices of *melanura* are superficially very reminiscent of both *C. angusticauda* and *C. fulvicapilla dispar*, particularly on the upperparts, and it might well be thought that the characters considered to distinguish *melanura* could be attributed to wider variation within a geographical continuum between conspecifics, as suggested by Dowsett & Dowsett-Lemaire (1980). However, on more critical examination *melanura* can be shown to possess characters not shared by the others, one of them unique.

Lynes (1930) in his review of the genus *Cisticola* examined the type of *melanura* and judged it not to be a member of the genus because of its steeply graduated tail with long narrow, plain blackish rectrices, and concluded it was nearer *Apalis*. Lynes originally also excluded *C. angusticauda* from *Cisticola*, but after extensive field experience reversed his earlier decision (Lynes 1936), noting that its behaviour, habitat, nest and even voice were remarkably like those of *fulvicapilla*. Lynes (1938) continued to exclude *melanura* from *Cisticola*, though commenting on its general similarity in appearance to *angusticauda*. He then went on to

TABLE 1

Known material of *Cisticola melanura*

Locality	Sex	Date	Wing	Tail	Culmen	Collector	Museum
Mona Quimbundo, Angola (type of *melanura*)	?[1]	1880	49	48	10.5	O. Schütt	Zoologisches Museum für Naturkunde der Humboldt-Universität, Berlin
Lufupa River, Shaba, Zaïre (type of *pearsoni*)	M	30 Oct 07	49	50	10	S. A. Neave	British Museum (Nat. Hist.), Tring
Lufupa River, Shaba, Zaïre	F	30 Oct 07	46	43	10	S. A. Neave	British Museum (Nat. Hist.), Tring
Lufupa River, Shaba, Zaïre	F[2]	28 Oct 07	49	43	11	S. A. Neave	American Museum of Natural History, New York (*ex* Tring coll.)
Near Nasondoye, Shaba, Zaïre (on upper Lufupa River)	F	26 Aug 33	45	40	11	Lynes/Vincent	British Museum (Nat. Hist.), Tring
Near Nasondoye, Shaba, Zaïre	F	26 Aug 33	45	42	11	Lynes/Vincent	British Museum (Nat. Hist.), Tring
Near Nasondoye, Shaba, Zaïre	F	26 Aug 33	47	42	11	Lynes/Vincent	British Museum (Nat. Hist.), Tring
Near Nasondoye, Shaba, Zaïre	M[3]	26 Aug 33	48	52	10	Lynes/Vincent	Koninklijk Museum voor Midden-Afrika, Tervuren (*ex* Tring coll.)
Gungu, Pay Kikwanga, Kwango, Zaïre (see Schouteden 1965)	?[3]	27 Feb 60	47	48	10	H. Wille	Koninklijk Museum voor Midden-Afrika, Tervuren
15 km SW of Cacolo, Angola	M[4]	27 Dec 54	49	46	10.5	G. Heinrich	Peabody Museum of Natural History, Yale University, New Haven
15 km SW of Cacolo, Angola	F[4]	8 Jan 58	43	41	11.0	G. Heinrich	Peabody Museum of Natural History, Yale University, New Haven
15 km SW of Cacolo, Angola	M[5]	—	—	—	—	G. Heinrich	Museu do Dundo, Dundo
Cafunfo, Lunda, Angola	M[5]	—	—	—	—	—	Museu do Dundo, Dundo
Near Cazoa, Angola (see text)	M[6]	7 Sep 57	49	51	11.5	R. Boulton	Field Museum of Natural History, Chicago

Notes:

[1] Specimen measured by G. Mauersberger

[2] Specimen measured by Stuart Keith

[3] Specimens measured by R. J. Dowsett

[4] Specimens measured by Mrs E. H. Stickney

[5] Specimens not examined (see Rosa Pinto 1973)

[6] Specimen measured by M. A. Traylor

remark on the all-black tail and generally blacker rather than brown-tinted feather tracts, *and the quite different wing contour to any Cisticola or Apalis we know of* (my italics), but did not discuss any other differences. This may seem strange, but J. Vincent, who accompanied Lynes on this and many other expeditions, remarks (*in litt.*) that once Lynes had dismissed any likelihood of a bird's being a *Cisticola* he could not be bothered further with it. Lynes did say that *melanura* was probably one of those birds which will not be properly classified until it is known in life, and regretted being unable to add anything substantial about it. The situation remains little different more than half a century later, though we can say with greater confidence now than then, that *melanura* is indeed a true though somewhat aberrant member of the genus *Cisticola*.

But to what did Lynes refer in his cryptic statement on unusual wing characters that nobody has ever subsequently commented upon? An examination shows that the wings are not only markedly rounded, but that the 5 distal primaries (except the vestigial outermost one) appear highly specialised; the rachis is twice the width of those of *fulvicapilla* and *angusticauda* (most noticeably so in males), glossy black and heavily melanised (hard and resistant to pressure), and it was to this that Lynes was undoubtedly referring. The only widely available description of *melanura* (Mackworth-Praed & Grant 1963) is inadequate, and the more important comparative characters distinguishing it from its closest relatives are given here. The markedly rounded wing has the outermost primary needle-shaped, acute, *c.* 6 mm exposed beyond the coverts, and the 4th primary (numbered from the outermost) shorter than primaries 5–6. In *fulvicapilla* the outermost primary is blade-like with *c.* 15–17 mm exposed; and in *angusticauda* it is somewhat intermediate, with primaries 3–6 equal in length, with primaries 2–3 narrowed, and the outermost primary narrow and acute (with *c.* 12 mm exposed). However, in both *fulvicapilla* and *angusticauda* the rachis is light brown (not black), of normal width and neither melanised nor stiffened. The tail of *melanura* is also atypical for the genus, consisting of narrow, jet-black rectrices, grey-tipped below (except the central pair) and lacking the blackish subterminal spot characteristic of the other two species; the outermost rectrix is *c.* 24 mm shorter than the innermost (central) pair, compared to *c.* 20 mm shorter in *angusticauda* and *c.* 10 mm shorter in *fulvicapilla*. In *melanura* the tail is also very narrowly margined brown above and silvery grey below and, more importantly, shows some sexual dimorphism. In the male the outer web of the outermost rectrix is contrastingly off-white (except for the grey tip), while in the female the outermost rectrix is simply edged brown. This character in the male is well shown in Grönvold's illustration of the type of *pearsoni* in *Ibis*, 1910, plate 2, where both sexes are illustrated. On the underparts *melanura* is colder and whiter, less buffy than either *C. f. dispar* or *angusticauda*. There are also size differences separating the three forms and these are set out in Table 2.

Despite differences in wing formulae, *melanura*, *angusticauda* and *dispar* are all similar in wing length. In contrast the tail of *melanura* is shorter than long-tailed *angusticauda*, the females significantly so, but both are markedly longer than short-tailed *dispar*. In bill measurements *angusticauda* is shorter (and finer), while *melanura* and *dispar* are similar.

TABLE 2

Comparative measurements (range and mean, in mm) of *C. melanura*, *C. angusticauda* and *C. fulvicapilla dispar*

Species	N	Wing	Tail	Culmen from base
melanura				
M	4	48–49 (48.7)	46–52 (49.9)	10.0–11.5 (10.5)
F	6	43–49 (45.9)	40–43 (41.8)	10.0–11.0 (10.8)
angusticauda				
M	50	46–51 (48.1)	48–61 (53.0)	9.5–10.5 (10.0)
F	30	41–49 (45.4)	43–54 (47.4)	9.0–10.5 (9.9)
dispar				
M	14	45–50 (48.5)	36–43 (39.0)	10.5–11.0 (10.8)
F	4	45–46 (45.2)	35–37 (35.7)	10.5–11.0 (10.7)

However, the race *dispar* has a considerably shorter bill (10.8) than *C. f. muelleri* (11.0–12.5, mean 11.6) inhabiting lower-rainfall savannas. The bill of *melanura* is sepia, with the lower mandible flesh-coloured, becoming blacker in skins; the culmen more arched and robust than in either *angusticauda* or *dispar*.

Moult and seasonal plumage changes

The available material shows no evidence of seasonal plumage differences or change from breeding to non-breeding dress. This is in sharp contrast to *fulvicapilla* and *angusticauda*, in which there are well-marked seasonal differences. From skulls Lynes (1938) estimated the Nasondoye series to be at least five months old; they are especially fresh-plumaged and cannot be distinguished from those obtained by Neave in late October when breeding should have started. It seems therefore that *melanura* may have only a single annual moult after breeding and lacks a distinctive nuptial plumage. In contrast both *fulvicapilla* and *angusticauda* have two annual body moults, immediately after breeding and again at the commencement of the following breeding season.

Remarks on specimens examined by others

The type of *melanura* in Berlin was examined by Dr G. Mauersberger who confirmed (*in litt.*) that the 5 distal primaries (excluding the outermost) showed broadened, almost glossy brown-black shafts. Lynes had written on the label that the specimen was not far removed from the birds in the British Museum labelled *pearsoni*, the only material difference in colour being that *pearsoni* has the rufous of the head and neck confined to a wash over the mantle, and that both specimens had the same black tail of long narrow rectrices and a very minute needle-shaped outermost primary. M. A. Traylor reporting on the male in Chicago confirms that it also possesses heavy black primary shafts and that the outer web of the outermost rectrix is white proximally, fading to dark grey distally. Stress was also placed on the very rounded wing compared with that of *angusticauda*, with the primaries seemingly much broader. Stuart Keith (*in litt.*), reporting on the specimen in New York, confirms that it has the same thickened black outer primary shafts and remarks on the extremely small outermost primary. R. J. Dowsett (*in litt.*), with Dr M. Louette, examined the two Tervuren specimens, one of them from Nasondoye (*ex* Tring) and reported on by Lynes (1938), the other from Pay Kikwanga, originally identified by Dr H. Schouteden and labelled in his handwriting. They were compared with a small series of *angusticauda* in breeding dress which were immediately distinguishable by the brick-red crown and greyish mantle, lacking in *melanura*. Dowsett concluded that *melanura* was nevertheless unlikely to be distinct from *C. fulvicapilla sensu lato*; he later examined the material in Tring but could not convince himself that *melanura* was a good species, in spite of plumage differences, the rounded wing and the stiffened primaries. Mrs E. H. Stickney (*in litt.*) compared the two specimens in New Haven, confirming that the black-shafted primaries were stiffened and the wing rounded. She also provided colour slides which enabled me to make a clearer assessment. The male has the crown and nape markedly reddish, contrasting strongly with the greyish mantle, and the wing-coverts and outer webs of the primaries and secondaries are undiluted grey. The female differs quite notably: the reddish tones extend over the back and wings, without any grey. Both possess the typical black tail, very noticeable in the male, whereas the female taken later in the season shows distinct signs of wear and abrasion. Lynes, comparing the type of *melanura* with *pearsoni*, noted that in the latter the rufous of the hind-neck was confined to a wash over the mantle, and from this it is assumed that *melanura* was the greyer of the two. Chapin (1953) also noted that the back may be greyer in the bird from Angola, more reddish-brown in that from Katanga. The male at New Haven seems to confirm this and the type of *melanura*, though unsexed, is from its size almost certainly a male (wing 49, tail 48). However, the contrastingly reddish tones of the single female cannot simply be put down to individual variation. There may possibly be additional sexual dimorphism in the Angolan population, and there may be geographical variation between the Angolan and Zaïrean isolates. However, it is not possible to pursue the matter at this stage with the very limited material available.

The bird in life

Those observers who have seen *melanura* in life have been struck by its distinctive habits, but have never compared it directly with *fulvicapilla* or *angusticauda*. Neave (1910a) found it not uncommon on the Lufupa River at the end of October, which would be the start of the breeding season. It was encountered usually in pairs and inhabited rather *tall* (author's italics) trees, not bushes in woodland; it was very conspicuous on the wing, and flew with a clicking sound, exactly as if it were going by clockwork. Heinrich (in Ripley & Heinrich 1960) found it near Cacolo in the continuous dry woods of the plateau, mostly in the neighbourhood of grassy clearings. It was neither very elusive nor difficult to observe, usually dwelling in the branches and crowns of lower trees, searching the foliage in the manner of an *Apalis*, for which it was mistaken several times. When disturbed or excited, they flipped their wings with a purring noise.

Specimens were obtained in the middle of the breeding season (a female ready to lay in early January). Lynes (1938) reported on it very briefly but never saw it alive. J. Vincent (*in litt.*) personally collected the only ones seen in late August before the onset of the breeding season, and wrote in his original field notes: "Both the 'pairs' of *melanura* which I watched (and shot) spent all the time poking about low down and kept up a continuous, small 'wisping' squeak very like that uttered by the Blue Waxbill *Uraeginthus angolensis*". Vincent also reports that there was no wing snapping as recorded by others, and this and the marked difference in behaviour may have reflected the time of year. Like Heinrich, he also remarked on the similarity in life between *melanura* and *Apalis*. Hall & Moreau (1970) quoted Vincent as saying *melanura* was quite uncisticoline in life. Dean *et al.* (1988) saw two birds in a mixed-species foraging flock in August in climax *Brachystegia boehmii* woodland, but the record needs verification.

It is not possible to draw any clear conclusions from these observations except that the species does appear to behave differently from its nearest relatives. It also seems highly probable that the unique wing specialization is connected with display flights in the breeding season.

Sympatry with *fulvicapilla* and *angusticauda*

Within the miombo biome *fulvicapilla* and *angusticauda* behave as allospecies with a narrow zone of hybridization in Zambia (Benson *et al.* 1971). Within their respective ranges they are believed to be continuously distributed in suitable habitat (see map in Dowsett & Dowsett-Lemaire 1980), making due allowance for unmapped areas. Their overall distribution is shown on map 199 in Hall & Moreau (1970) and that for *melanura* (as *Apalis melanura*) on map 214. However, attention must be drawn to the corrections on map 214 under *Corrigenda* in Snow (1978). If the latter map is superimposed on the former it shows that *melanura* either replaces *angusticauda* locally in parts of Shaba or is sympatric with it. It seems significant that neither Neave (1910a) nor Lynes (1938) ever reported *angusticauda* on the upper Lufupa River where it would certainly be expected to occur, and Dowsett & Dowsett-Lemaire (*op. cit.*) remark that it is strange that *melanura* has never been recorded in adjacent Zambia where *angusticauda* is common. Being more similar to one another than either is to *fulvicapilla*, they may replace each other locally. However, it can now be shown conclusively that in at least one Angolan locality *melanura* and *C. f. dispar* are fully sympatric. Mrs E. H. Stickney (*in litt.*) reports that apart from the two *melanura* specimens from near Cacolo, there is also a single specimen of *dispar* collected there by Heinrich on 29 December 1957, showing that they must occur alongside one another there.

Remarks on collecting localities

Doubt surrounds a number of localities where *melanura* has been recorded, and there is need for clarification. The type locality of *melanura* long given simply as Angola, or more specifically northern Angola, was restricted by Irwin (1990) to Mona Quimbundo, in Lunda Province at 09°55′S, 19°58′E. The type locality of *pearsoni* was given somewhat imprecisely by Neave (1909) as the Lufupa River, western Katanga. Neave (1910b) provided a detailed map of his journey; he crossed the Lufupa River twice on its upper reaches, but the map is not helpful in pinpointing where precisely his specimens were collected. However, Lynes (1938) regarded his specimens from near Nasondoye at 10°30′S, 25°00′E as being topotypes, and Nasondoye may be conveniently regarded as the restricted type locality. It should be noted that the Neave and Lynes material was mapped separately in Hall & Moreau (1970), later corrected in Snow (1978). Irwin (1990) has already noted that the Heinrich specimens (Ripley & Heinrich 1960), stated to have been collected 50 km southwest of Cacolo, were actually obtained only 15 km to the southwest with approximate co-ordinates 10°00′S, 19°24′E. Some doubt also surrounds the Boulton specimen from Cazoa which M. A. Traylor (*in litt.*) was unable to trace on any map. However, he has kindly informed me that from the collector's itinerary and field notebooks it appears to have been in Lunda between Caxia at *c.* 08°54′S, 20°39′E and the crossing of the Rio Cassai at *c.* 11°12′S, 20°15′E. The locality Cafunfo, in Rosa Pinto (1973), has not been precisely located, but from his text, where it is mentioned with some frequency, it must be somewhere in the north of Angola in Lunda along the Cuango River. (According to M. A. Traylor (*in litt.*), the Cacolo specimen listed therein was almost certainly collected by Heinrich who deposited a number of specimens in the Museu do Dundo.) Finally Dean *et al.* (1988) give a sight record from Kangandala National Park in Malange, which (if verified, see above) would extend the range of the species westwards. They give only co-ordinates for Kangandala village at 09°47′S, 16°28′E, which may be used as an approximate position.

Relationships

The degree of relationship between *C. fulvicapilla* and *C. angusticauda* on the one hand and *C. melanura* on the other is especially difficult to assess. Dowsett & Dowsett-Lemaire (1980) were quite emphatic that the first two are conspecific, and few would deny (including the present writer) that in life they seem identical in habits, behaviour and similarity of voice. Yet if they were merely geographical representatives of a single variable species it would be difficult to reconcile not just differences in plumage but structural aspects (wing formulae and structure, and tail-length and proportions). But it is worth pointing out that whereas *fulvicapilla* is highly polytypic and wide-ranging, *angusticauda* (also wide-ranging) is virtually endemic to miombo and shows no geographical variation. At the same time there are equally and undeniably close similarities between *angusticauda* and *melanura* (though not in behaviour), which in some respects seem structurally closer to one another than either is to *fulvicapilla*. And whereas *fulvicapilla* and *angusticauda* have parapatric ranges with an apparent narrow hybrid zone, *angusticauda* and *melanura* appear mutually exclusive. *C. melanura* on the other hand is known to be at least partially sympatric with *C. f. dispar* and they cannot be treated as conspecific. The little that is known of *melanura* in life, together with its specialised wing morphology, points to its being adapted to a life-style different from either *fulvicapilla* or *angusticauda*. These facts further emphasise our present lack of knowledge and proper understanding of the relationships and evolutionary history of this group of cisticoline warblers.

Acknowledgements

I am most grateful to Mr G. S. Cowles and Mr P. R. Colston of the Bird Room staff, Tring, who made available facilities for study. I must also thank all those who examined specimens in their care on my behalf, among them Dr G. Mauersberger of the Zoologisches Museum für Naturkunde der Humboldt-Universität, Berlin; Dr M. Louette of the Koninklijk Museum voor Midden-Afrika, Tervuren; Major M. A. Traylor of the Field Museum of Natural History, Chicago; Mr Stuart Keith of the American Museum of Natural History, New York; and Mrs E. H. Stickney of the Peabody Museum of Natural History at Yale University, New Haven; and finally Mr R. J. Dowsett who looked at material on my behalf in both Tervuren and Tring. I am also most grateful to Professor C. H. Fry and Mr Stuart Keith for helpful comments on a draft of this paper.

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Desert Sparrows *Passer simplex* in the Sudan

by J. S. Ash & G. Nikolaus

Received 19 February 1991

In his excellent monograph on the sparrows *Passer* spp. of the world Summers-Smith (1988), in discussing the Desert Sparrow *Passer simplex*, concluded that since the last century it appears to have become extinct in the Sudan, where its type locality is situated. Previously it was found in the north of this country south to Sennar (13°30′N, 33°37′E) on the Blue Nile, east to the Red Sea at Suakim (=Suakin) (19°05′N, 37°20′E), and west to the Libyan border (Cave & Macdonald 1955, Mackworth-Praed & Grant 1955, Nikolaus 1987, Vaurie 1956).

The notion that Desert Sparrows have disappeared from the Sudan is emphasised by Mackworth-Praed & Grant (*loc. cit.*) who, in describing its former distribution, add "but not recorded for the last 100 years"; and Cave & Macdonald (*loc. cit.*) remark "Said to have occurred long ago . . . possibly still occurring in extreme north-west." Etchécopar & Hüe (1964) go further by stating that it does not occur east of Ennedi (in Chad).

Desert Sparrows have actually been recorded on several occasions in the Sudan this century, but apparently none of them has been published. They were seen as recently as 1986 and quite probably have never been absent, rather than that they are re-establishing themselves. The following 9 records are known from the period 1935–1986.

1. 1935–1954. P. Hogg (*in litt.*) only found Desert Sparrows once, in the Jebel Meidob area (*c.* 15°20′N, 26°30′E), and also to the north of it in the one-degree squares of 16°N, 26°E, where they bred, and 17°N, 26°E.
2. 1958–1961. P. Dare (*in litt.*), when travelling from Khartoum to Dongola, recorded the species in one-degree square 17°N, 31°E.
3. 1 April 1964. J. E. Jany (*in litt.*), travelling from Omdurman to Dongola, saw a few in the tops of old acacia trees at the desert well of Ganetti (18°00′N, 31°16′E), south of Debba.
4. December 1982. GN in one-degree square 15°N, 31°E, en route from Khartoum to Dongola, saw a pair in an open sandy area with scattered *Acacia nubica* bushes.
5. December 1982. GN in one-degree square 16°N, 31°E, en route from Khartoum to Dongola, found a pair in similar habitat to no. 3 above.
6. December 1982. GN in one-degree square 17°N, 31°E, en route from Khartoum to Dongola, saw 2 pairs in an open sandy area with scattered Tundub bushes *Capparis decidua*. They were accompanied by a Lesser Whitethroat *Sylvia curruca*, a species overwintering in the area.
7. January 1983. GN in one-degree square 15°N, 31°E, at 60 km NW of Khartoum, saw a male sheltering in an old stick nest, probably of *Spreo pulcher*, in a tall acacia in a wadi in open sandy grassland.
8. 26 September 1986. JSA & GN at 17°19′N, 31°17′E, 92 km SSE of Debba (18°05′N, 30°45′E), found 4 (2♂♂, 2♀♀) in the vicinity of a pole and grass desert tea-house and its associated buildings.

9. 26 September 1986. JSA & GN at 16°55′N, 31°29′E, 144 km SSE of Debba, found a pair at an untidy domed nest with at least 2 recently hatched pulli at 3 m height in a Tundub bush. The female was taking insects to the nest.

Lynes (1924–1925), visiting the above and adjoining areas (North and Central Darfur, West and Central Kordofan, and North Nuba Province), did not record Desert Sparrows; nor did J. F. Madden (personal notes) working around Dongola (19°20′N, 30°29′E) in 1947–1951.

From local accounts the area in which we saw birds had become increasingly desertified in recent years; previously it had been inhabited by stock-owning people. All that remained in 1986 were scattered small bushes, slightly more prolific at the second site in a barely discernible shallow wadi, and elsewhere some ruined and deserted habitations.

Summers-Smith (*loc. cit.*) states that this sparrow exists at greater density where there are larger trees, so that the present apparently small population appears to occupy less than optimal habitat. It is also interesting that it was breeding at the hottest time of the year. A few days earlier at Wadi Halfa (21°55′N, 31°20′E) daily shade temperature maxima had ranged from 45° to 50°C, and it seemed to be no less hot in the present area, where bushes were ringed with dead and dying Palearctic migrants of which 19 species were found. The means by which the effective incubation temperature is maintained at such high ambient temperatures requires investigation, although Sopyev (1965) shows that the time spent incubating by Desert Sparrows is reduced when outside temperatures rise.

Desert Sparrows seem always to have been rare and poorly known in the Sudan. The long periods when there were no records at the end of the last century and the first half of this one could have resulted from lack of observation and/or recording, rather than a total absence of birds. Probably it has had a continuous presence in the Sudan since it was originally discovered there and the observations quoted above do not imply a recolonisation. Like other desert species, Desert Sparrows are probably partly nomadic and numbers in any one area, and their distribution, may vary from year to year.

Acknowledgements

We thank Dr J. D. Summers-Smith for his comments on this paper, and the following who kindly allowed their observations to be included here: P. Dare, P. Hogg and J. E. Jany.

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BOOKS RECEIVED

Brooke, M. & Birkhead, T. (eds) 1991. *The Cambridge Encyclopedia of Ornithology*. Pp. 362. Numerous text-figures in colour and black-and-white, diagrams and maps. Cambridge University Press. ISBN 0 521 36205 9. £24.95. 28 × 27 cm.

An attractive, and also intellectually stimulating, volume which presents a scientific and at the same time very readable survey of the whole of ornithology in 362 pages—a formidable achievement which is accomplished by reducing the systematic survey of bird families, usually the main part of a book of this sort, to 35 pages (the passerine families are merely listed) and dealing mainly with subjects. The various chapters, or parts of chapters, are by 39 contributors, many of them leading specialists. Special topics (e.g. tool-using, food-caching, factors influencing bird distribution, niches and ecological segregation) are dealt with in 'information panels' interspersed in appropriate places in the text. Thus this is not an alphabetically arranged encyclopedia of traditional type, but the comprehensive index in three parts (scientific names, common names, subjects) enables the reader to run down information relatively easily. References are confined to a 3-page list of 'Further reading'. For a stimulating survey of recent research in ornithology, and underlying biological principles, this book could not easily be bettered; but the large format and square shape make it easier to put on a coffee table than in its rightful place on a personal library shelf.

Holmes, D. 1990. *The Birds of Sumatra and Kalimantan*. Pp. xii + 83. 25 colour plates. Oxford University Press. ISBN 0 19 588971 1. £6.95. 19.5 × 13 cm.

This brief but useful introduction to the birds of Sumatra and the Indonesian part of Borneo does not aim to be comprehensive; 148 species are described and a further 129 referred to more briefly. The colour plates, by Stephen Nash, illustrate a good selection of mainly forest birds, and some others are illustrated in black-and-white text-figures. It is planned to produce an Indonesian language edition, in the hope of stimulating greater local interest in a rich and, inevitably, threatened avifauna.

Inskipp, C. & T. 1991. *A Guide to the Birds of Nepal*. Pp. 400. 8 colour plates, numerous text-figures and maps. Christopher Helm. ISBN 0 7136 8109 8. £35.00. 25 × 19 cm.

An updated edition of the excellent book published in 1985. It follows the first edition closely; but one more species has now been added to the list (now 836 species), much new information has been incorporated into the text, and the invaluable distribution maps (increased from 676 to 703) have been improved, especially by new records from the previously very little-known west of the country. The 8 colour plates are unchanged except for an improved plate of buntings, and additional species are illustrated in text-figures. For those who do not know the first edition, it may be mentioned that this is not a field-guide; the emphasis is on distribution, but there is a useful 49-page section, with clear line drawings, on the identification of difficult groups (mainly birds of prey, waders, gulls, owls, wagtails, pipits, warblers, rosefinches and buntings), and the colour plates illustrate difficult warblers, rosefinches and buntings.

The visibly most obvious change is that the text is set in 'proper' print instead of the camera-ready type-face of the old edition, with the consequence that it is much easier and pleasanter to read and also more economical of space; hence the amplified text takes almost exactly the same number of pages as before.

Phillips, A. R. 1991. *The Known Birds of North and Middle America*. Part II, Bombycillidae; Sylviidae to Sturnidae; Vireonidae. Pp. liii + 249. 5 colour plates. Published by the author (3540 S. Hillcrest Dr. no. 5, Denver, Colorado 80237). ISBN 0 9617402 1 3. $64.00. 23 × 15 cm.

This is the second part of a highly individual and outspoken work, the first part of which was published, also by the author, in 1986 (see *Ibis* 129: 586–587). The rather surprising title was chosen to make a point, that in the author's opinion all the birds of North and Middle America are *not* accurately known; by this he means principally that the ranges and characters of all the subspecies have not been properly worked out, and that some forms treated as subspecies may be full species. In a remarkable 36-page introduction Phillips discusses at length the reasons why he has for many years been "agin' the government", the government being the AOU, National Science Foundation and other ornithological and scientific organizations. He does not mince his words, and it is perhaps not surprising, though regrettable, that the hostility has been mutual. One of his main contentions is that much more collecting is still needed; he advocates traditional, museum-based ornithology, and denounces what he sees as modern scientific fads.

The main text consists of a systematic treatment of seven families, with the emphasis on distribution (including migrations) and geographical variation, the two most important in number of American species being the Muscicapidae (subfamily Turdinae) and Vireonidae. A mass of information is presented; many previous errors are pointed out, and 45 new subspecies are described. The five colour plates illustrate selected plumages of thrushes, bluebirds and vireos.

The title page mentions the cooperation of D. D. Gibson (who contributed the short sections on the Muscicapinae, *Prunella*, *Motacilla* and *Anthus*), K. C. Parkes, M. A. Ramos and A. M. Rea, and the help of many others is acknowledged; but first and foremost this is a personal manifesto and minutely detailed systematic work by a traditional avian taxonomist who deplores most of what has been happening in ornithology in recent decades.

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Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
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B. G. Harrison	1946–1947
Lt.-Col. W. P. C. Tenison	1947–1948
Miss E. M. Godman	1947–1948
Col. R. Meinertzhagen	1948–1949
Maj. A. G. L. Sladen	1948–1949
Col. R. Meinertzhagen	1949–1953
E. M. Nicholson	1953–1956
Capt. C. R. S. Pitman	1956–1959
Mrs B. P. Hall	1959–1962
R. S. R. Fitter	1962–1965
Dr J. F. Monk	1965–1968
Sir Hugh Elliott	1968–1971
J. H. Elgood	1971–1974
P. Hogg	1974–1977
Dr G. Bevan	1977–1980
B. Gray	1980–1983
Revd G. K. McCulloch	1983–1986
D. Griffin	1986–1989
J. H. Elgood	1989–1990
D. Griffin	1990–

Editors

R. Bowdler-Sharpe	1892–1904
W. R. Ogilvie-Grant	1904–1914
Dr D. A. Bannerman	1914–1915
D. Seth-Smith	1915–1920
Dr P. R. Lowe	1920–1925
N. B. Kinnear	1925–1930
Dr G. Carmichael Low	1930–1935
Capt. C. H. B. Grant	1935–1940
Dr G. Carmichael Low	1940–1945
Lt.-Col. W. P. C. Tenison	1945–1947
Capt. C. H. B. Grant	1947–1952
Dr J. G. Harrison	1952–1961
J. J. Yealland	1962–1969
C. W. Benson	1969–1974
Sir Hugh Elliott	1974–1975
Dr J. F. Monk	1976–1990
Dr D. W. Snow	1991–

Honorary Secretaries and Treasurers

Howard Saunders	1892–1899
W. E. De Winton	1899–1904
H. F. Witherby	1904–1914
Dr P. R. Lowe	1914–1915
C. G. Talbot-Ponsonby	1915–1918
Dr D. A. Bannerman	1918–1919
Dr Philip Gosse	1919–1920
J. L. Bonhote	1920–1922
C. W. Mackworth-Praed	1922–1923
Dr G. Carmichael Low	1923–1929
C. W. Mackworth-Praed	1929–1935

Honorary Secretaries

Dr A. Landsborough Thomson	1935–1938	N. J. P. Wadley	1950–1960
C. R. Stonor	1938–1940	Miss E. Forster	1960–1962
N. B. Kinnear	1940–1943	Dr J. G. Harrison	1962–1964
Dr G. Carmichael Low	1943–1945	C. J. O. Harrison	1964–1965
Lt.-Col. W. P. C. Tenison	1945–1947	M. W. Woodcock	1965–1969
Capt. C. H. B. Grant	1947	D. R. Calder	1969–1971
W. E. Glegg	1947–1949	R. E. F. Peal	1971–1989
Miss G. M. Rhodes	1950	Mrs A. M. Moore	1989–

Honorary Treasurers

C. W. Mackworth-Praed	1935–1936	P. Tate	1962–1974
Maj. A. G. L. Sladen	1936–1942	M. St. J. Sugg	1974–1978
Miss E. P. Leach	1942–1949	Mrs D. M. Bradley	1978–1990
C. N. Walter	1950–1962	S. J. Farnsworth	1990–

COMMITTEE

Elected 21 May 1991

R. E. F. PEAL *Chairman (1989)*
Dr D. W. SNOW *Editor (1991)*
Mrs A. M. MOORE *Hon. Secretary (1989)*
Cdr M. B. CASEMENT, O.B.E., R.N., RETD. *(1990)*
Reverend T. W. GLADWIN *(1990)*
D. GRIFFIN *Vice-Chairman (1990)*
S. J. FARNSWORTH *Hon. Treasurer (1990)*
Dr R. A. CHEKE *(1991)*
Dr J. F. MONK *(1991)*

CHANGES IN MEMBERSHIP 1991

New Members

C. L. Bonfield
N. J. Bucknell
R. Costas
D. E. Crockett
A. R. Daniel
J. de Schutter-Bart
M. Eens
D. S. Fitzpatrick
J. A. Flynn
N. R. Fuggles-Couchman
S. Fulford
F. M. Gauntlett
D. J. Glaves
P. D. Goriup
C. J. Hazevoet
D. Henderson
E. S. Jamnicky
R. M. Jones
C. Kostense
O. Lindblad
N. V. McCanch
J. E. McCarthy
K. J. McGowan
B.-U. Meyburg
G. Micali
D. Peakall
S. Proctor
P. B. Riddett
W. F. Rohr
M. B. Shaw
D. T. Smith
P. W. Smith
J. T. Stenwig
P. Straw
J. D. Summers-Smith
E. P. Toyne
H. T. Tutak
S. van Balen
M. Verhaagh
C. A. Viney
R. Walters
C. J. Whittles
M. S. Witter

Re-elected

P. Ashton, A. Hill, J. W. W. Metcalfe, J. L. Woodson

Deaths

The Committee very much regrets to report the deaths of the following Members (see Report of the Committee for 1991): Major N. A. G. H. Beal, R.M., (Member 1947–1951, 1979–1991), Major I. R. Grimwood, O.B.E., (Member 1956–1991), N. Mayaud (Member 1929–1991), Dr A. Prigogine, (Member 1957 1991), Professor Dr E. Schüz, (Member 1954–1991), Professor Dr H. Sick, (Member 1980–1991).

Resignations in respect of 1991

P. R. Boardman, H. M. Davies, L. J. H. Flack, J. D. Goulding, N. R. McLean, D. Roberts, J. B. Smith, B. C. Turner, A. Vittery.

Removed from membership under Rule (7)

M. D. Bruce, J. E. du Pont, M. C. Edwards, C. D. B. Gibbons, H. S. Gibbons, N. C. S. Jackson, C. Kelly, M. Lambertini, R. J. W. Ledgerton, R. Massa, H. Meeus, X. Montbailliu, J. O'Halloran, M. Pesente, N. M. Powell, P. Rollin, D. Siegal-Causey, H. W. Wigley, R. P. S. Wolsey, S. J. Woolfall.

BRITISH ORNITHOLOGISTS' CLUB LIST OF MEMBERS

paid up at 31 December 1991

1960 Adams, J. K.; 95 Alleyn Park, LONDON SE21 8AA (*Committee 1971–1973*)
1986 Adcock, M. A.; "The Saltings", 53 Victoria Drive, Great Wakering, SOUTHEND-ON-SEA, Essex SS3 0AT
1983 Aguillo Cano, I. F.; Apartado 129, 26200 HARO (La Rioja), **Spain**
1984 Aidley, Dr D. J.; The Old Woolpack, Morley St. Botolph, WYMONDHAM, Norfolk NR18 9AA
1988 Alberti, P.; Via B Cellini 10, 21052 BUSTO ARSIZIO, **Italy**
1984 Albrecht, J. S. M.; 12 Hemingford Road, CAMBRIDGE CB1 3BZ
1979 Alder, J. R.; Burngate, Peckons Hill, Ludwell, Nr SHAFTESBURY, Dorset SP7 0RN
1980 Allison, R.; The Laurels, Manchester Road, Sway, LYMINGTON, Hants SO4 0AS
1989 Allport, G.; The Homestead, The Green, Old Buckenham, Nr ATTLEBOROUGH, Norfolk NR17 1SF
1978 Altman, Dr A. B.; PO Box 441, GREAT BARRINGTON, MA 01230-0441, **USA**
1980 Amadon, Dr D.; American Museum of Natural History, Central Park West at 79th St, NEW YORK, NY 10024, **USA**
1990 Anderton, W. N.; 16 Skipton Road, Embsay, SKIPTON, N. Yorkshire BD23 6QL
1983 Andrew, P.; PO Box 153, NORTH SYDNEY, NSW 2060, **Australia**
1980 Antram, F. B. S.; c/o Traffic (Australia), 53 Sydney Road, PO Box 799, MANLY, NSW 2095, **Australia**
1976 Arita Ichiro; 23 ban 1go 5F, Minami Aoyama 4 chome, Minato-ku, TOKYO 107, **Japan**
1986 Arlott, N. A.; Hill House, School Road, TILNEY ST LAWRENCE, Norfolk
1978 Ash, Dr J. S.; Godshill Wood, FORDINGBRIDGE, Hants SP6 2LR
1974 Ashton, P. J.; National Institution for Water Research, CSIR, PO Box 395, PRETORIA 0001, **South Africa**
1981 Aspinwall, Dr D. R.; PO Box 50653, RIDGEWAY 15101, **Zambia**

1969 Backhurst, G. C.; PO Box 24702, NAIROBI, **Kenya**
1986 Bain, Major P. M.; 15 Witham Bank East, BOSTON, Lincs PE21 9JU
1986 Baker, E. W.; 10 Rose Grove, Roman Bank, SKEGNESS, Lincs PE25 1SH
1986 Baker, Miss H.; 27 Pheasants Way, RICKMANSWORTH, Herts WD3 2EX
1986 Baker, N. E.; Aquila Engineering Services, PO Box 23404, DAR ES SALAAM, **Tanzania**
1991 Balen, S. Van; PO Box 47, BOGOR 16001, **Indonesia**
1990 Barber, R. A. H.; HQ 107 BDE, BFPO 825
1951 Barlow, Capt. Sir Thomas, Bt., D.S.C., R.N.; 45 Shepherds Hill, Highgate, LONDON N6
1991 Bart, M. de Schutter; Ouderstraat 18–20, 2610 WILRIJK, **Belgium**
1989 Bates, J. M.; Museum of Natural Science, 119 Foster Hall, Louisiana State University, BATON ROUGE, LA 70803, **USA**
1987 Baylis, A. H.; 135 Fairbridge Road, LONDON N19 3HF
1985 Beakbane, Mrs A. J.; 26 Cathcart Road, LONDON SW10 9NN
1979 Beaman, M. A. S.; Two Jays, Kemple End, Birdy Brow, STONYHURST, Lancs BB6 9QY
1989 Beck, B. H.; 25 St Thomas, West Parade, BEXHILL ON SEA, Sussex TN39 3YA
1976 Becking, J. H.; Ericalaan 7, 6703 EM WAGENINGEN, **Netherlands**
1982 Beecroft, R.; 2 Fen Cottages, Fen Lane, Creeting St Mary, IPSWICH, Suffolk IP6 8QE
1976 Beer, T.; Tawside, 30 Park Avenue, BARNSTAPLE, Devon EX31 2ES
1976 Belman, P. J.; Number Two, School Passage, SOUTHALL, Middx UB1 2DR
1966 Bennett, P.; 29 Loop Road South, WHITEHAVEN, Cumbria
1979 Betton, K. F.; 8 Duke's Close, Folley Hill, FARNHAM, Surrey GU9 0DK (*Committee 1985–1988*)
1986 Bindeman, Mrs J.; 41 Lovett Road, Byfield, DAVENTRY, Northants NN11 6XF
1982 Bishop, K. D.; Semioptera, Lot 15, Kerns Road, KINCUMBER, NSW 2250, **Australia**
1980 Bison, P. W.; C Springerstraat 11–II, 1073 LD AMSTERDAM, **Netherlands**
1985 Bock, Prof. W. J., Ph.D.; Dept of Biological Sciences, Columbia University, NEW YORK, NY 10027, **USA**
1991 Bonfield, C. L.; Yew Tree Cottage, Great Easton, DUNMOW, Essex CM6 2HQ
1990 Bonser, R. H. C.; Dept of Zoology, Bristol University, Woodland Road, BRISTOL BS8 1UG
1958 Booth, Major B. D. McDonald; The Moorland Gallery, 23 Cork St, LONDON W1X 1HB
1986 Borello, Mrs W. D.; PO Box 603, GABORONE, **Botswana**
1981 Borras Hosta, Antoni; Poeta Mistral 101–3, Manresa, BARCELONA, **Spain**
1966 Boswall, J. H. R.; Birdswell, Wraxall, BRISTOL BS19 1JZ (*Committee 1973–1976*)
1985 Boswell, Mrs E. M.; PO Box 23404, DAR ES SALAAM, **Tanzania**
1981 Boughton, R. C.; Croftfoot, Ennerdale, CLEATOR, Cumbria CA23 3AZ
1956–70, 1984 Bourne, Dr W. R. P.; 3 Contlaw Place, Milltimber, ABERDEEN AB1 0DS
1986 Bowley, J. J.; 8 Greenodd Drive, Longford, COVENTRY CV6 6LT
1953 Bradley, Mrs D. M.; 6 Ariel Court, Ashchurch Park Villas, LONDON W12 9SR (*Committee 1968–1972, 1975–1978, Hon. Treasurer 1978–1989*)
1985 Bradley, Mrs P. E.; (Turks & Caicos), Foreign & Commonwealth Office, King Charles Street, LONDON SW1A 2AH
1980 Bradshaw, C. D.; Heather Hill, Stoney Cross, Nr LYNDHURST, Hants SO43 7GP
1990 Bradshaw, C. G.; 112 Lonsdale Drive, Rainham, GILLINGHAM, Kent ME8 9JA
1989 Briggs, Dr K. B.; 2 Osborne Road, FARNBOROUGH, Hants GU14 6PT
1966 Britton, P. L.; All Souls' and St Gabriel's School, PO Box 235, CHARTER TOWERS, Queensland 4820, **Australia**
1987 Broad, D.; 15 Cotsford Avenue, NEW MALDEN, Surrey KT3 5EU
1988 Brown, B. J.; 24 Clifton Road, LOWESTOFT, Suffolk NR33 0HF
1986 Brown, J. N. B.; Holly Cottage, Watersplash Lane, Cheapside, ASCOT, Berks SL5 7QP
1987 Brown, S. P.; 7 Bartle Place, Ashton, PRESTON, Lancs PR2 1LS
1979 Browne, P. W. P.; 115 Chrichton Street, OTTAWA, Ontario, **Canada** K1M 1V8
1981 Bryant, Dr D. M.; Dept of Biology, University of Stirling, STIRLING FK9 4LA
1991 Bucknell, N. J.; 7 Pound Cottages, Wallingford Road, Streatley, READING RG8 9JH
1976 Bull, Dr J.; American Museum of Natural History, Central Park West at 79th St, NEW YORK, NY 10024, **USA**

1989 Bull, P. J.; 35 Melbury Avenue, NORWOOD GREEN, Middlesex UB2 4HS
1970 Burton, J. A.; The Old Mission Hall, Sibton Green, SAXMUNDHAM, Suffolk IP17 2TY (*Committee 1971–1974*)
1963 Burton, Dr P. J. K.; High Kelton, Doctors Commons Road, BERKHAMSTED, Herts HP4 3DW
1976 Bynon, Dr J.; Lippitt's End, Mott Street, High Beach, LOUGHTON, Essex IG10 4AP

1988 Cabot, J.; Pabellon del Peru, Avda Maria Luisa S/N, 41013 SEVILLE, **Spain**
1989 Cain, A. P. E.; 1 Molesford Road, Parsons Green, LONDON SW6 4BU
1963 Calder, D. R.; "Birdwood", Madeira Road, WEST BYFLEET, Surrey KT14 6DN (*Committee 1967–1969, 1984–1987, Hon. Secretary 1969–1971, Chairman 1980–1983*)
1957 Campbell, Dr N. A.; PO Box 3136, Paulington, MUTARE, **Zimbabwe**
1987 Cannings-Bushell, P. C.; c/o 32 Chesterton Park, CIRENCESTER, Glos GL7 1XT
1988 Carpenter, C. F.; PO Box 1763, ENGLEWOOD, CO 80150–1763, **USA**
1977 Carswell, Dr M.; 38 Park Avenue, ORPINGTON, Kent
1981 Carter, A. G. T.; UNICEF (New Delhi), Palais des Nations, CH 1211 GENEVA 10, **Switzerland**
1982 Carter, C.; PO Box 71793, NDOLA, **Zambia**
1970 Carthy, D. P.; Data Processing Unit, Dept. of Dentistry, University of Hong Kong, 34 Hospital Road, **Hong Kong**
1971 Casement, Cdr M. B., O.B.E., R.N.; Dene Cottage, West Harting, PETERSFIELD, Hants GU31 5PA (*Committee 1990–*)
1986 Cattaneo, G.; Via Mussatti 2, 10090 Rivara CAM (TORINO), **Italy**
1979 Chancellor, R. D.; 15b Bolton Gardens, LONDON SW5 0AL (*Committee 1979–1982*)
1986 Chapman, S. E.; "Steeplefield", Marlpost Road, Southwater, HORSHAM, Sussex RH13 7BZ
1988 Chapman-Kofron, Ms A.; Dept of Biology, Universiti Brunei Darussalam, BANDAR SERI BEGAWAN 3186, **Brunei Darussalam**
1973 Chatfield, D. G. P.; Rhiwenfa, Rhiw, PWLLHELI, Gwynedd LL53 8AE
1963 Chaytor, Dr R. G.; Triangle, Keenley, ALLENDALE, Northumberland NE47 9NT
1980 Cheke, Dr R. A.; N.R.I., Central Avenue, Chatham Maritime, CHATHAM, Kent ME4 4TB (*Committee 1991–*)
1987 Cheshire, N. G.; 4 Willora Road, EDEN HILLS, South Australia 5050, **Australia**
1977 Christmas, T. J.; 5 Balfour Road, Islington, LONDON N5 2HB
1985 Christy, P.; 1 Rue des Promenades, 79.500 MELLE, **France**
1938 Clancey, P. A., D.Sc.; Fernleigh Gardens, 8 Lambert Road, Morningside, DURBAN 4001, **South Africa** (*Hon. Life Member*)
1985 Claridge, J. C. R.; 17 Moana Road, Plimmerton, via WELLINGTON, **New Zealand**
1981 Clark, K. W. F.; 136 Evans Road, BLOOMFIELD, NY 07003, **USA**
1989 Clarke, Sqn. Ldr. M. C. A., R.A.F.; Officers' Mess, Royal Air Force, Boulmer, ALNWICK, Northumberland NE66 3JF
1989 Coleman, B.; Little Place, Rogers Lane, STOKE POGES, Bucks SL2 4LU
1986 Coleman, J. R.; Hewelsfield, Snowdenham Links Road, BRAMLEY, Surrey GU5 0BX
1972-76, 1980 Coles, S. J. W., M.B.E.; 7 Chipstead Park Close, Chipstead, SEVENOAKS, Kent TN13 2SJ
1983 Collar, Dr N. J.; 45 de Freville Avenue, CAMBRIDGE CB4 13HW
1983 Collins, D. R.; 11 Shelley Road, KETTERING, Northants NN16 9LD
1987 Collins, I. D.; 30 Clonmel Way, BURNHAM, Bucks SL1 7DA
1979 Collins, R. E. C.; Seatonden, Seaton, Ickham, CANTERBURY, Kent CT3 1SL
1976 Colston, P. R.; Sub-Dept. of Ornithology, British Museum (Natural History), TRING, Herts HP23 6AP
1952 Conder, P. J., O.B.E.; Old Close Orchard, 12 Swaynes Lane, Comberton, CAMBRIDGE CB3 7EF (*Committee 1982–1985*)
1986 Contento, G.; Via Desenibus 8, 34074 MONFALCONE, **Italy**
1985 Cook, Dr Marion; Scheibenbergstrasse 20/5, A 1180, VIENNA, **Austria**
1981 Coomber, R. F.; Springfield, Bashley Road, NEW MILTON, Hants BH25 5RX
1984 Cornwallis, Dr L.; Glyme Farm, Charlbury Road, CHIPPING NORTON, Oxon OX7 5XJ
1991 Costas, R.; Avda da Florida 95–7B, 36210 VIGO (Pontevedra), **Spain**
1961 Cottrell, G. W., Jnr; PO Box 1487, HILLSBORO, NH 03244, **USA**
1979 Court-Smith, Sq.Ldr D. St J.; 38 Sand Hill, FARNBOROUGH, Hants GU14 8EW
1980 Cowan, Dr P. J.; Gleann Cottage, Glenlomond, KINROSS, Tayside KY13 7HF
1975 Cowles, G. S.; Tetherstones, 23 Kirkdale Road, HARPENDEN, Herts AL5 2PT
1986 Cox, Dr R. A. F.; Linden House, Long Lane, Fowlmere, ROYSTON, Herts SG8 7TG
1984 Craddock, B.; 44 Haling Road, Penkridge, STAFFORD ST19 5DA
1973 The Earl of Cranbrook, Ph.D.; Great Glemham House, Great Glemham, SAXMUNDHAM, Suffolk IP17 1LP
1986 Crilley, T. L.; 73. Cleveland Road, NORTH SHIELDS, Tyne & Wear NE29 0NW
1981 Crocker, N. J.; Arlington, Douro Road, CHELTENHAM, Glos GL50 2PF
1991 Crockett, D. E.; 21 McMillan Avenue, Kamo, NORTHLAND, **New Zealand**
1986 Crosby, M. J.; 21 Eastern Street, CAMBRIDGE CB1 3AB
1989 Cross, J. K.; 62 Hulbert Road, Bedhampton, HAVANT, Hants PO9 3TG
1978 Croucher, R. A. N.; Uplands Lodge, Manor Road, SMETHWICK, W. Midlands B67 6SA (*Committee 1980–1984*)
1958 Cudworth, J.; 17a Prospect Road, OSSETT, Yorks WF5 8AE
1980 Cull, S. B.; Trevenna Cottage, Harlyn Road, St Merryn, PADSTOW, Cornwall PL28 8NS
1946 Cunningham van Sommeren, G. R.; PO Box 24947, Karen, NAIROBI, **Kenya**
1980 Curtis, W. F.; Farm Cottage, Church Lane, Atwick, DRIFFIELD, E. Yorks YO25 8DH

1988 Da Fonseca, P. S. M.; R. Benjamin Batista 161 #101, CEP 22.461, RIO DE JANIERO RJ, **Brazil**
1991 Daniel, A. R.; 21 Kingsbury Avenue, DUNSTABLE, Beds LU5 4PU
1988 Daulne, J-M.; Rue Laforge 11, 5460 MORMONT-EREZEE, **Belgium**
1986 Davidson, I. S.; 49 Benton Park Road, NEWCASTLE-ON-TYNE NE7 7LX
1986 Davies, J.; 83 Rectory Lane, Leybourne, WEST MALLING, Kent ME19 5HD
1983 Davies, Dr M. G.; Summerleas, Crapstone Road, YELVERTON, Devon PL20 6BT
1986 Davis, C. J.; 4 Muller Road, Horfield, BRISTOL BS7 0AA
1973 Davison, Dr G. W. H.; WWF (Malaysia), Locked Bag No 911, Jalan Sultan PO, 46990 PETALING JAYA, **Malaysia**
1985 Dean, A. R.; 2 Charingworth Road, SOLIHULL, W. Midlands B92 8HT
1975 Dean, W. J. R.; Karoo Biome Research, PO Box 47, PRINCE ALBERT 6930, **South Africa**
1990 Demarchi, Dr. P.; Via Grassi 19, 43044 Collecchio, PARMA, **Italy**
1987 Demey, R.; Grote Peperstraat 3, B-9100 SINT-NIKLAAS, **Belgium**
1986 Dennis, M. K.; 173 Collier Row Lane, ROMFORD, Essex RM5 3ED
1985 Denton, M. L.; 77 Hawthorne Terrace, Crosland Moor, HUDDERSFIELD, Yorks HD4 5RP

1970 Desfayes, M.; Prevan, CH 1920 FULLY, **Switzerland**
1978 Devillers, Dr P. J.; 11 Avenue de l'Oiseau Bleu, B1150 BRUSSELS, **Belgium**
1984 Diamond, Dr A. W.; 1033 University Drive, SASKATOON, Saskatchewan, **Canada** S7N 0K4
1974 Dick, J. A., F.R.C.S.; 33 St Mary's Road, LONDON SW19 7BP
1965 Dickinson, E. C.; Norman Chapel, Aston Magna, MORETON IN MARSH, Glos. GL56 9QN
1952 Dickinson, H. J.; Abinger Cottage, Paston, NORTH WALSHAM, Norfolk NR28 9TB
1957 Dillingham, I. H.; The Low House, Lower Longwith, Collingham, WETHERBY, W. Yorks LS22 5BX
1986 Dobbins,R.; 317 Gladbeck Way, ENFIELD, Middx EN2 7HR
1956 Dorst, Prof. J.; 14 Quai d'Orleans, 75004 PARIS, **France**
1962 Dowsett, R. J.; Rue de Bois de Breux 194, B 4500, JUPILLE-LIÈGE, **Belgium**
1986 Duckett, J. E.; 94 Lorong Chong Khoon Lin 6, Ukay Heights, 68000 AMPANG, Selangor DE, **Malaysia**

1986 Earp, M. J.; 63 Ivinghoe Road, Bushey, WATFORD, Herts WD2 3SW
1967 Eddie, W. M. M.; c/o Pirie, 55 Silverknowles Crescent, EDINBURGH EH4 5JA
1985 Eden, R. M. G.; Haliki, Lower Beach Road, West Bexington, DORCHESTER, Dorset DT2 9DG
1977 Eley, J. T.; 5 Morgan Close, Saltford, BRISTOL BS18 3LN
1963 Elgood, J. H.; 26 Walkford Way, HIGHCLIFFE, Dorset BH23 5LR (*Committee 1967–1970, 1986–90, Vice-Chairman 1971–1974, Chairman 1974–1977*)
1973 Elkins, D. A.; Le Frugier, St Mesmin, 24270 LANOUAILLE, **France**
1989 Elphick, J. H.; Centre Cottage, Clapham, Nr EXETER, Devon EX2 9UN
1985 Elsworthy, Dr G. C.; 14 Greenbank Avenue, Maghull, LIVERPOOL L31 2JQ
1986 Ennis, L. H.; School Cottage, Plaistow, BILLINGSHURST, W. Sussex RH14 0PX
1986 Erritzoe, J.; Taps GL Praestegaard, DK 6070 CHRISTIANSFELD, **Denmark**
1986 Evans, G. G.; 1 Coach House Mews, Upper Church Road, WESTON-SUPER-MARE, Avon BS23 2DY

1988 Fanshawe, J. H.; c/o I.C.B.P., 32 Cambridge Road, Girton, CAMBRIDGE CB3 0PJ
1979 Farmer, R. J.; Bodlondeb, 5 Stryd Hottipass, ABERGWAUN, Dyfed SA65 9LJ
1986 Farnsworth, S. J.; Hammerkop, Frogmill, Hurley, MAIDENHEAD, Berks SL6 5NL (*Committee 1989–90, Hon. Treasurer 1990–*)
1988 Feare, Dr C. J.; MAFF, Tangley Place, WORPLESDON, Surrey GU3 3LQ
1981 Fergenbauer-Kimmel, Dr A.; Donrather Str. 2, D 5204 LOHMARL, **Germany**
1979 Field, G. D.; 37 Milton Grove, NEW MILTON, Hants BH25 6HB
1978 Fisher, Miss C. T.; Section of Birds and Mammals, Liverpool Museum, William Brown Street, LIVERPOOL L3 8EN
1976 Fisher, D. J.; 56 Western Way, SANDY, Beds SG19 1DU
1986 Fishpool, Dr L. D. C.; 12 Mountain St, Chilham, CANTERBURY, Kent CT4 8DQ
1943 Fitter, R. S. R.; Drifts, Chinnor Hill, OXFORD OX9 4BS (*Committee 1959–1962, Vice-Chairman 1962–1965, Chairman 1965–1968*)
1991 Fitzpatrick, Ms. S.; Dept of Biological & Biomedical Sciences, University of Ulster at Jordanstown, NEWTOWN ABBEY, Co Antrim BT37 0QB
1991 Flynn, J. A.; 77 Braxted Park, LONDON SW16 3AU
1984 Fowler, Dr J. A.; Hafod Heli, High Street, BORTH, Dyfed SY24 5JE
1985 Franke, Ms I.; Museo de Historia Natural, Casilla 140434, LIMA 14, **Peru**
1989 Franks, J. A.; Flat 6, Lakeland House, Marine Road East, MORECAMBE, Lancs LA4 6AY
1978 Fraser, M. W.; Sandbanks, Kenmuir Steps, Hopkirk Way, GLENCAIRN 7995, **South Africa**
1979 Frusher, D. M.; The Barn House, Greatworth, BANBURY, Oxon OX17 2DT
1965 Fry, Prof. C. H., D.Sc.; Biology Dept., College of Science, Sultan Qaboos University, PO Box 32486, Al Khoudh, MUSCAT, **Oman**
1991 Fuggles-Couchman, N. R.; Post House, Broughton, STOCKBRIDGE, Hants SO20 8AA
1991 Fulford, S.; 100 Caesar Avenue, CARNOUSTIE, Angus DD7 6DS
1985 Futter, Dr K. R.; Arkells, 29 Hunstanton Road, HEACHAM, Norfolk PE31 7JY

1981 Galey, C. P.; 29 Ainsdale Drive, Werrington, PETERBOROUGH, Cambs PE4 6RL
1959 Gallagher, Major M. D.; c/o PO Box 668, MUSCAT, **Oman**
1976 Galsworthy, A. C., CMG; c/o FCO (Hong Kong), King Charles Street, LONDON SW1A 2AH
1988 Gardner-Medwin, Dr D.; Flocktous, Station Road, Heddon-on-the-Wall, NEWCASTLE-UPON-TYNE NE15 0EG
1991 Gauntlett, F. M.; 55 Larkfield Avenue, HARROW, Middx HA3 8NQ
1974 Gibbs, A.; 48 Bolton Road, CHESSINGTON, Surrey KT9 2JB
1966 Gibson, Dr J. A.; Foremount House, KILBARCHAN, Renfrewshire PA10 2EZ
1986 Gil, D.; Vitoria 27, 09004 BURGOS, **Spain**
1962–70, 1988 Gillham, E. H.; 31 Coast Drive, Lydd on Sea, ROMNEY MARSH, Kent TN29 9NL
1975 Gilston, H.; Chemin des Mouettes 16, CH 1007, LAUSANNE, **Switzerland**
1983 Gladwin, The Rev. T. W.; 99 Warren Way, Digswell, WELWYN, Herts AL6 0DL (*Committee 1990–*)
1991 Glaves, D. J.; 9 High Street, Kenton, Nr EXETER, Devon
1981–1983, 1986 Gochfeld, Dr M.; 54 Hollywood Avenue, SOMERSET, NJ 08873, **USA**
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CORRECTIONS TO TEXT

Page 6, line 32: *Pterophanes cyanopterus* not *P. cyanoptera*
Page 8, line 4: *Pterophanes cyanopterus* not *P. cyanoptera*
Page 9, line 8: *Pterophanes cyanopterus* not *P. cyanoptera*
Page 7, line 27: *Carduelis atrata* not *Carduelis atratus*
Page 8, line 24: *Carduelis atrata* not *Carduelis atratus*
Page 8, line 8: *andecolus* not *andicolus*
Page 12, line 5: *M. nigricauda* not *M. nigicauda*
Page 47, line 48: *Glyphorhynchus* not *Glyphorynchus*
Page 54, line 19: *Corythaixoides* not *Corythaixioides*
Page 80, line 24: *burrovianus* not *burroviannus*
Page 121, line 43: *strigulosus* not *strigilosus*
Page 135, line 29: *caudacuta* not *caudata*
Page 140, lines 30 & 31: *littoralis* not *litoralis*

Printed in Great Britain by Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

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Birds

ISSN 0007–1595

Bulletin of the

British Ornithologists' Club

Edited by
Dr D. W. SNOW

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Volume 112 No. 1 March 1992

FORTHCOMING MEETINGS

Tuesday, 7 April 1992. We are happy to welcome **Dr Carlo Violani**, of the Università di Pavia, again. Dr Violani spoke to the Club on the birds of Sardinia in 1987 and his subject this time is the 18th century naturalist **"Giovanni Antonio Scopoli and his influence on Italian Ornithology".**

Those wishing to attend are asked to notify the Hon. Secretary by Tuesday, 24 March 1992.*

Tuesday, 19 May 1992. Dr Michel Louette of the Musée Royal de l'Afrique Centrale, Tervuren, Belgium, is an expert systematist and taxonomist involved in tropical African birds, especially of Zaïre and Cameroon. He will be speaking on **"The Birds of the Comoro Islands".**

Those wishing to attend are asked to notify the Hon. Secretary by Tuesday, 5 May 1992.*

Tuesday, 9 June 1992. Brian Meadows will speak on **"The birds of Central Hejaz, Western Arabia"**. He is concerned with water and environmental management, particularly in Kenya and Saudi Arabia where he has worked for over 15 years. He has also served on the Governing Council of the UN Environmental Programme.

Those wishing to attend are asked to notify the Hon. Secretary by Tuesday, 26 May 1992.*

Tuesday, 14 July 1992. Dr Storrs L. Olson, Curator in the Division of Birds at the Smithsonian Institution, Washington, since 1975, has an international reputation for his research in avian palaeontology. He will speak on **"Prehistoric Birdlife of the Hawaiian Islands".**

Those wishing to attend are asked to notify the Hon. Secretary by Tuesday, 1 July 1992.*

Tuesday, 28 July 1992. Dr Angela Turner, "The Hirundines: a most entertaining tribe of Birds".

Tuesday, 15 September 1992. Dr W. and Dr U. Thiede, "Japan—Britain of the East?".

Meetings are held in the Senior Common Room, Sherfield Building, Imperial College, London SW7 at 6.15 pm. for 7 pm. A plan showing Imperial College will be sent to members on request.

*Late acceptances and cancellations can usually be taken up to the Thursday morning preceding a meeting, although members are asked to accept by 14 days beforehand as arrangements for meetings have to be confirmed with Imperial College well in advance.

If you accept and subsequently find you are unable to attend please notify the Hon. Secretary, 1 Uppingham Road, Oakham, Rutland LE15 6JB (tel. 0572 722788) as soon as possible as the booking can often be offered to another member.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 112 No. 1 Published: 20 March 1992

REPORT OF THE COMMITTEE FOR 1991

Meetings. Nine evening meetings of the Club were held in 1991, in the Sherfield Building, Imperial College, London. A total of 436 members and guests attended. Facilities for speakers were enhanced by the provision of a sound amplification system in part purchased by the Club and generously set up by P. J. Sellar.

During the year speakers included Dr John Croxall, Professor C. Hilary Fry, who was making a brief visit to Britain from Oman, and the Chairman, Ronald Peal, who spoke at a well attended meeting in November.

At the evening meeting following the AGM on 21 May the Chairman continued the practice, revived in 1990, of presenting the Chairman's Report. His subject this year was F. J. S. Barrington and Herbert Stevens, Benefactors of the Club. This was of particular relevance in 1991 as the house at Tring which Herbert Stevens bequeathed to the Club was vacated, and together with its garden, for which the Club had obtained outline planning consent for development, was placed on the market.

It is intended that a Herbert Stevens Fund should be set up with the proceeds of the sale. The augmented funds which would then be available to the Club from the income generated by the Fund would enable projects to be undertaken in pursuance of the objects of the Club. It is hoped to place the scheme for the setting up of the new Fund before members at the AGM in 1992 for approval.

Committee. Because of the increased business concerned with the disposal of 'Clovelly' the Committee met 8 times during 1991. The attendance of members averaged 79%.

Preparations are in hand for the publication of a book to mark the Centenary of the Club, which falls on 5 October 1992. This will take the form of annotated extracts from the *Bulletin* since it was first published. It is edited by Dr David Snow and is to be published by Helm Information Limited. Work has continued on the special additional issue of the *Bulletin*, edited by Dr J. F. Monk, and some 24 authors, specialists in various fields, have agreed to contribute papers.

Preliminary arrangements are being made for a dinner to celebrate the Centenary during October or November 1992.

In response to requests from members a Club tie has been designed and is now available for sale.

Membership recruitment was continued by the enclosure of the Club's leaflet in *Ibis* 133(3), 1991 and in *Malimbus* 13(1), 1991. New members of the Union are contacted after their election. This brought an increase in new members to 43 in 1991.

Deaths. It is with deep regret that the Committee reports the deaths of Major N. A. G. Beal (Member 1947–1951 & 1979–1991), Major I. R. Grimwood O.B.E. (Member 1956–1991), M. Mayard (Member 1929–1991), Dr A. Prigogine (Member 1957–1991), Professor Ernst Schüz (Member 1954–1991) and Professor Helmut Sick (Member 1980–1991).

Membership. The recruitment of 43 new members brought an increase in paid-up membership to 623 at December 1991. There were 391 members with U.K. addresses and 232 members with addresses overseas. 4 members who were in arrears for 1990 became paid up in 1991 and 9 members resigned from 1 January 1991. 21 members were in arrears in 1991 and 20 members were struck off under Rule (7) having failed to pay the subscription for 1990.

Membership 1990. Due to changes in the membership list compilation in 1990 several errors unfortunately occurred and the numbers given in the Report of the Committee 1990 were inaccurate (*Bull. Brit. Orn. Cl.* 111:2). There were, in fact, 12 resignations from 1 January 1990 and 20 members failed to pay their subscriptions for the year. Paid up membership at 31 December 1990 was 612, 388 within the U.K. and 224 overseas. This was a fall in the number of paid up members of the Club for the year, but it in part reflected the decrease in the number of members recruited to the Union, from which the Club would have expected to recruit new members in 1990.

Bulletin sales. Non-member subscribers were 148, 23 within the U.K. and 125 overseas. A general reduction in non-member subscribers has been noted by publishers world-wide in recent years and is considered to reflect a lack of funds now available to institutions and libraries. Mrs F. E. Warr kindly continues to look after the stock of back-numbers of the *Bulletin*, dealing with back-number sales and with separates for authors.

Bulletin. Volume 111 contained 240 pages, maintaining the enlarged size of recent years. Papers included descriptions of one new species and 5 new subspecies; new distributional data from India, Guatemala, Mexico, Peru, Bolivia and Brazil; new ecological, breeding and behavioural data on many little known species; and several discussions of problematical points of taxonomy and nomenclature. The usual very welcome geographical spread of authors was maintained, with contributors from 17 countries and 5 continents. We recorded above the death of Helmut Sick, a contributor over many years, who died while his latest paper, on a little-known Brazilian swift (pp. 38–41), was in proof.

Finance. As a result of the substantial deficit in 1990, the Committee decided to raise the annual subscription for members to £8.50, from January 1992. This is not a high charge for what the Club offers. Thanks to the high reputation of the *Bulletin*, and much hard work to increase the number of members and the sales of the *Bulletin*, it had been possible to maintain an unchanged annual subscription for 13 years, a considerable feat in view of the high rates of inflation during that period.

In 1991 transfer was made of the Club's main bank account to Barclays Bank plc, on which interest is paid at rates comparable with those for money on deposit. As a new service to members a credit card facility for payment of subscriptions and for goods was introduced in November. The Giro account is being maintained for the time being as a service to overseas members.

The accounts for 1991, which are not yet available, will be tabled at the Annual General Meeting and published subsequently in the *Bulletin*. Members wishing to have copies before the Annual General Meeting are asked to apply to the Honorary Treasurer.

ANNUAL GENERAL MEETING

The 1992 Annual General Meeting of the British Ornithologists' Club will be held in the Senior Common Room, Sherfield Building, Imperial College, London SW7 at 6 p.m. on Tuesday 19 May 1992.

AGENDA

1. Minutes of the last Annual General Meeting (see *Bull. Brit. Orn. Cl.* 111: 113–114).
2. Report of the Committee and Accounts for 1991.
3. The *Bulletin*.
4. Election of Officers. The Committee proposes that:—
   (i) Mr S. J. Farnsworth be re-elected Honorary Treasurer
   (ii) Mrs A. M. Moore be re-elected Honorary Secretary.
5. The Committee proposes the following resolution:—
   "1. That Richard Charles Price and Nigel John Crocker be appointed new Trustees of the Trust Deed dated 24 September 1985 ("the 1985 Trust Deed") to fill the vacancies caused by the retirement of John Gordon Parker and David Reginald Calder.
   2. That approval be given by the Club to the alteration of the trusts powers and provisions contained in the 1985 Trust Deed contained in the document submitted to this meeting."
6. Any other business of which notice shall be given in accordance with Rule (12).

By Order of the Committee
AMBERLEY M. MOORE, *Honorary Secretary*

The text of the document referred to in item 5 of the Agenda above which will be submitted to the meeting is as follows:—

THIS DEED is made on 1992

BY RICHARD CHARLES PRICE of 10 Maltravers Street, London WC2R 3BS Solicitor, PETER JAMES OLIVER of 'The Briar Patch', Trevereux Hill, Limpsfield Chart, Oxted, Surrey RH8 0TL and NIGEL JOHN CROCKER of 'Arlington', Douro Road, Cheltenham, Gloucestershire GL50 2PF (together "the Trustees")

SUPPLEMENTAL to the Trust Deed ("the Trust Deed") specified in schedule 1.

WHEREAS

(A) The Original Trustees hold the freehold property known as 'Clovelly', 4 Beaconsfield Road, Tring, Hertfordshire ("the property") upon trust for sale under the trusts contained in the Trust Deed and it is intended that the proceeds of sale of the property shall be held under the continuing trusts of the Trust Deed and the trusts of this deed and shall be known as "The Herbert Stevens Fund".

(B) By clause 8 of the Trust Deed the Trustees being the present Trustees of the Trust Deed may with the previous approval of the Committee at any time revoke or alter all or any of the trusts powers and provisions of the Trust Deed or add any new trusts powers and provisions whether applicable to any particular property held by the Trustees or generally.

(C) A majority of the members of the Committee has given their approval to the provisions contained in this deed by voting thereon at a meeting of the Committee.

(D) The Trustees wish to revoke the provisions specified in schedule 2.

(E) The Trustees wish to add the provisions specified in schedule 3.

NOW THIS DEED WITNESSETH as follows

1. The Trustees HEREBY IRREVOCABLY REVOKE the clauses of the Trust Deed specified in schedule 2.
2. The Trustees HEREBY IRREVOCABLY DECLARE that the Trust Deed shall be read and construed as if the provisions specified in schedule 3 were expressly incorporated in the Trust Deed.
3. THIS TRUST shall be known as "The Herbert Stevens Trust" or by such other title as the Trustees may from time to time by deed appoint.

SCHEDULE 1

Trust Deed dated 24 September 1985 made between Bernard Gray and Diana Mary Bradley (1) and John Gordon Parker, Peter James Oliver and David Reginald Calder (2) ("the Original Trustees").

SCHEDULE 2

(a) Sub-clause 4(3) (Trustees' powers regarding income and capital);

(b) clause 5 (Trustees' powers of investment);

(c) clause 8 (Trustees' power to vary trusts of Trust Deed).

SCHEDULE 3

4(3) Subject to the foregoing provisions of this clause and to any conditions subject to which any particular property may be vested in them the Trustees shall pay to the Treasurer any income arising from the property or from any money investments or other property from time to time held by the Trustees under this deed, and may apply any money representing the capital so held by them or any part thereof for such purposes as the Club from time to time approves.

5. In furtherance of the objects of the Club as set out in the Rules of the Club (but not further or otherwise) the Trustees in addition and without prejudice to all other powers hereby or by law conferred on them shall have the following powers exercisable at their discretion:

    (a) to apply any money or property for the time being subject to the trusts hereof by investing the same in the names or under the control of the Trustees in the purchase or on the security of such shares stocks funds or other investments apart from freehold and leasehold property whatsoever and wheresoever and whether or not involving liability or producing income or by lending the same to such person or persons as the Trustees shall in their absolute discretion think fit TO THE INTENT that the Trustees shall have the same full and unrestricted powers of investing and retaining varying and transposing investments and laying out money in all respects (without being obliged to diversify investments) as if they were absolute beneficial owners thereof but subject always to such consents and conditions (if any) as may for the time being be imposed or required by law;

    (b) to accept and receive (or in the discretion of the Trustees to disclaim) gifts subscriptions donations subsidies grants guarantees covenanted payments legacies bequests or other payments or transfers of money or property of any kind to be held as an addition to the Trust Fund or any part thereof including power to accept and receive the same on or subject to any special trusts conditions or restrictions within the objects of the Club and for such purposes to enter into such contracts within the objects of the Club as the Trustees think fit;

(c) in connection with the investment and changing of investments of trust money to obtain and pay for the advice of such brokers and other professional advisers as the Trustees may think fit.

8. The Trustees may with the previous approval of the Club at any time by an instrument in writing under seal revoke or alter all or any of the trusts powers and provisions herein contained or add any new trusts powers and provisions whether applicable to any particular property held by the Trustees or generally.

9(6) Any approval given by the Club for the purposes of this deed shall be sufficiently given if given by a resolution passed by a majority of four-fifths of members voting thereon at a general meeting of the Club at which not less than 25 members are present and of which not less than three weeks notice specifying the resolution which it is intended to propose shall have been given in the manner in which notice of general meetings of the Club is usually given.

11. The Trustees shall keep proper accounts of all money received or other property for the time being vested in or held by them under this deed and of any payments made or expenses incurred by them under or for the purposes of this deed and (if and so long as the trustees shall not be a trust corporation) once at least in every year such accounts shall be examined and audited by the auditors for the time being of the Club and as soon as practicable after 31 December in every year or such other date as may be determined by the Committee the Trustees shall present to the Committee a copy of the accounts for the period from the date to which the last audited account so presented shall have been made up, or, in the case of the first account, from the date of this deed, and a copy of the auditors' report on such accounts.

THIS DEED has been executed as a deed on the date first written above.

SIGNED as a Deed and DELIVERED by RICHARD CHARLES PRICE in the presence of:

SIGNED as a Deed and DELIVERED by PETER JAMES OLIVER in the presence of:

SIGNED as a Deed and DELIVERED by NIGEL JOHN CROCKER in the presence of:

The Trust Deed specified in Schedule 1 was published in *Bull. Brit. Orn. Club,* 1985 105(10) pp. 3–7. Copies of this may be obtained on application to the Hon. Secretary.

The eight hundred and thirteenth meeting of the Club was held on Tuesday 22 October 1991 in the Ante-Room, Sherfield Building, Imperial College, South Kensington at 6.15 p.m. 28 members and 14 guests attended.

Members attending were: R. E. F. PEAL (*Chairman*), Dr R. A. CHEKE (*Speaker*), M. A. ADCOCK, Miss H. BAKER, P. J. BELMAN, Mrs D. M. BRADLEY, Cdr M. B. CASEMENT, RN Retd, I. D. COLLINS, P. J. CONDER, Dr H. P. Q. CRICK, S. J. FARNSWORTH, G. D. FIELD, Rev. T. W. GLADWIN, D. GRIFFIN, R. H. KETTLE, Dr J. F. MONK, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, J. G. PARKER, R. G. PRICE, V. SAWLE, Dr R. SELF, P. J. SELLAR, R. E. SHARLAND, Dr D. W. SNOW, A. SWASH, Dr J. F. WALSH.

Guests attending were: Mrs B. ADCOCK, I. BEAMES, D. J. CHEKE, Dr J. A. COLES, J. R. DAVIDSON, Mrs F. M. FARNSWORTH, Mrs J. M. GLADWIN, Miss K. HOFF, A. M. HUTSON, P. J. MOORE, Dr J. MORRIS, C. A. MULLER, Mrs M. PRICE, P. SALAMAN.

After supper Dr Robert A. Cheke spoke on the birds of Togo. Following a brief introduction to the history of the country, which was controlled by the Germans from 1884 to 1914 when important collections were made by Baumann, Buttner, Zech and others at Misahohe, Bismarckburg, Mango and elsewhere, he showed colour slides illustrating key habitats and their birds. In addition to Afro-tropical species, many migrant Palaearctic birds occur in Togo including substantial populations of House Martins *Delichon urbica*. Alpine Swifts *Apus melba* are also regularly seen.

The eight hundred and fourteenth meeting of the Club was held on Tuesday 26 November 1991 in the Senior Common Room, Sherfield Building, Imperial College, South Kensington at 6.15 p.m. 35 members and 23 guests attended.

Members attending were: R. E. F. PEAL (*Chairman and Speaker*), M. A. ADCOCK, Miss H. BAKER, B. H. BECK, P. J. BELMAN, P. J. BULL, Dr J. BYNON, I. COLLINS, D. R. CALDER, Cdr M. B. CASEMENT, RN Retd, Dr R. CHEKE, P. J. CONDER, A. GIBBS, Rev. T. W. GLADWIN, D. GRIFFIN, C. A. R. HELM, K. W. HENSHALL, R. H. KETTLE, I. T. LEWIS, Dr J. MELDRUM, Dr J. F. MONK, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, P. J. OLIVER, J. G. PARKER, R. G. PRICE, A. J. RANDALL, P. REDMAN, M. L. R. ROMER, Dr R. SELF, N. H. F. STONE, M. P. WALTERS, C. WHEELER, M. W. WOODCOCK.

Guests attending were: Mrs B. ADCOCK, Mrs H. BULL, Professor T. BYNON, Professor R. CHANDLER, Mrs E. CHANDLER, J. CRYER, J. FISHER, Mrs L. FISHER, Mrs J. M. GLADWIN, Mrs S. GRIFFIN, Mrs B. HAMMOND, D. HARRIS, Miss K. HOFF, Ms M. HUNT, Dr H. MELDRUM, Mrs D. MONK, P. J. MOORE, R. NEWTON, Mrs E. NEWTON, Mrs M. OLIVER, Mrs B. PEAL, Mrs M. PRICE, Mrs B. J. WOODCOCK.

New distributional information on Mexican birds. I. The Sierra de Atoyac, Guerrero

by Adolfo G. Navarro S., A. Townsend Peterson & Patricia Escalante P.

Received 20 February 1991

Ornithologists have studied Mexican birds for several centuries, with the earliest scientific treatments dating from about 1570 (Trabulse 1983). Nevertheless, much remains to be learned about the distribution, biology, status and ecology of the Mexican avifauna (Escalante *et al.*, in press). Many biologically important areas and habitats remain largely unexplored due to remoteness or difficulty of access. This paper represents the first of an intended series of reports on new information on Mexican birds gained as a result of surveys and collecting efforts by ourselves and our colleagues.

The avifauna of the Sierra Madre del Sur of Guerrero has been studied intensively during the past 120 years. The first explorations of the region were by collectors working for Salvin & Godman (1879–1904). Subsequently, information was reported by Nelson (1903). Griscom (1934, 1937), Berlioz (1937), Martín del Campo (1948), Blake (1950) and Goldman (1951). Wilmot W. Brown, a professional collector, spent many years in the vicinity of Chilpancingo and Omiltemi (often misspelled Omilteme), assembling large series of most species present. More recent studies in the Omiltemi area have yielded a few additions to the avifauna and detailed ecological information on most species present (Navarro & Escalante, in prep.).

Omiltemi and most of the other old collecting localities are located on the drier, interior slopes of the Sierra Madre del Sur. The avifauna of the more humid, coastal slopes of the mountain range, however, remains largely unknown. Collectors in the employ of Robert T. Moore explored the forests between the lowland city of Atoyac de Alvarez and the highest peak in the region, Cerro Teotepec, discovering the Short-crested

Coquette *Lophornis brachylopha* (Moore 1949, Banks 1990), as well as several other new forms (Friedmann *et al.* 1950, Miller *et al.* 1957). Besides these specimens, many of which carry incomplete locality data, little is known of the area's avifauna. In this paper, we present new distributional information on populations of four species newly discovered in the area during seven years of work in the Sierra de Atoyac. Data on altitudinal distributions are given in Navarro (1986, and in press); and an apparently new species of *Cypseloides* swift collected in the region will be described in detail elsewhere (Navarro *et al.*, in prep.).

Two of us (AGNS and PEP, later joined by ATP) began working in the Sierra de Atoyac in 1983. Work was concentrated along an altitudinal transect from the city of Atoyac de Alvarez to near the peak of Cerro Teotepec, at altitudes from 600 to 3100 m. The base of the transect lies in semideciduous tropical forest, above which is cloud forest, humid pine-oak forest, and finally fir forest. On 17 trips totalling 90 field days, we assembled a list of 162 species. Three of these proved to be considerable range extensions and new records for the state of Guerrero, and one other provided a definite record for a species formerly of doubtful status in the state. Below, we describe briefly information on these populations, presenting comparisons with specimens from other geographic areas. Throughout, we refer to the collections of the Museo de Zoología, Facultad de Ciencias, Universidad Nacional Autónoma de México, the Instituto de Biología, UNAM, and the Museum of Zoology, University of Michigan, as MZFC, IBUNAM, and UMMZ, respectively.

EYE-RINGED FLATBILL *Rhynchocyclus brevirostris*

This species ranges from Colombia and Ecuador north to Puebla and Veracruz on the Atlantic slope, and southern Oaxaca on the Pacific slope (A.O.U. 1983, Binford 1989). The nominate subspecies is found in eastern and southern Mexico, and the subspecies *pallidus* is known from the Sierra de Yucuyacua and the Sierra de Miahuatlán of Oaxaca (Binford 1965). Three specimens (MZFC 5870, IBUNAM 7335, 7336) have been collected from the Sierra de Atoyac of Guerrero, including one male and two females. Two of these were collected in semideciduous tropical forest at Arroyo Grande, 13 km NE of Paraiso, and the third was taken in cloud forest near the ranch called Retrocesos.

Comparisons of plumage colouration with representatives of other populations of this species indicate that the Guerrero population is indistinguishable from populations of southern Oaxaca (*pallidus*), and differs from specimens from Veracruz and Chiapas (*brevirostris*) in having a paler breast and upper throat (as in Binford 1965). Measurements of several characters (Table 1), though based on small sample sizes, indicate no significant differences among populations from Guerrero, southwestern and southern Oaxaca, and southern Chiapas.

OLIVACEOUS WOODCREEPER *Sittasomus griseicapillus*

This species ranges widely in South America, north through Central America to San Luis Pososí and southwestern Tamaulipas on the Atlantic slope (Miller *et al.* 1957), and west to the Sierra de Miahuatlán on the Pacific slope of Oaxaca (Binford 1989). Populations on the Pacific slope in Jalisco and Nayarit are thought to be geographically isolated (Miller *et al.*

1957, Grant 1964, Escalante 1988). Nine specimens in the collections of MZFC and IBUNAM now document the presence of this species in semideciduous tropical forest in the Sierra de Atoyac. The series includes five males and four females, eight of which were obtained at Arroyo Grande, 13 km NE of El Paraiso, and one at El Faisanal. Recent records indicate that populations exist on the coastal slopes of Michoacán (L. and F. Villaseñor, pers. comm.). Given the discovery of populations intermediate between the supposedly disjunct populations of southern Oaxaca and Jalisco, we predict that additional work will document populations of the species continuously along the Pacific slope of Mexico from Oaxaca through Nayarit.

Comparisons of plumage colouration of the Guerrero population with that of populations to the northwest and east indicate few characters distinguishing *jaliscensis* of Jalisco from populations of southern Oaxaca and eastern Mexico. Measurement data for the Guerrero population are overall more similar to the populations of Jalisco than to those of Oaxaca and Chiapas (Table 1): populations of Guerrero and Jalisco have consistently longer beaks, wings and tails than populations to the southeast.

GOLDEN-CROWNED WARBLER *Basileuterus culicivorus*

This species is known from Tamaulipas and Nuevo León on the Atlantic slope, and southeastern Oaxaca on the Pacific slope, south to northern Argentina (Miller *et al.* 1957). Populations from Nayarit south to Colima (Miller *et al.* 1957, Schaldach 1963, Escalante 1988) and on the Pacific slope of Oaxaca (Phillips 1966) are thought to be disjunct isolates. Twenty-one specimens in the collections of the MZFC and IBUNAM document the existence of populations in the Sierra de Atoyac between 600 and 1400 m altitude in semideciduous tropical forest and the lower reaches of cloud forest. Given the habitat usage of the species, which includes disturbed habitats, we predict the presence of continuous populations along the entire Pacific slope of Mexico, especially in the foothills of coastal Michoacán.

Comparisons of colouration, especially of the yellow crown stripe, suggest that the Guerrero population falls into an overall cline from brighter and yellower in the northwest to duller with greater orange suffusion in eastern and southern populations. Individual variation apparently related to age, however, is strong, with geographic differences apparent only in the frequency of pure, broad, yellow crown stripes. We consider division of this subtle clinal variation (formerly known from the terminal populations only) into subspecies (Phillips 1966) unnecessary, because the overall level of differentiation is at best slight. Measurement data (Table 1) indicate little geographic variation in size and shape, other than slight clines towards increasing wing and tail length in northwestern populations.

LONG-BILLED STARTHROAT *Heliomaster longirostris*

This species is known from Bolivia and central Brazil north to Veracruz on the Atlantic slope and western Oaxaca on the Pacific slope (Friedmann *et al.* 1950, Binford 1989). Although the species is listed for Guerrero by Friedmann *et al.* (1950), its status in Guerrero is recorded as doubtful by

TABLE 1

Measurements of populations of the four species along the Pacific slope of Mexico and Guatemala. Measurements (mm) are bill length from anterior edge of nostril, tarsus length, wing chord, and tail length. Feather characters (wing and tail) were not measured on some individuals due to wear of the plumage

Population	Sex	n	Bill	Tarsus	Wing	Tail
Heliomaster longirostris						
Guerrero	M	5	30.86±1.65	—	59.5±2.6	37.4±1.2
Oaxaca	M	1	31.25	—	61.2	39.20
Chiapas	M	5	28.68±2.39	—	62.3±2.3	35.8±1.2
Guatemala	M	6	28.88±1.65	—	61.5±1.9	32.0±0.6
Sittasomus griseicapillus						
Jalisco	M	3	10.54±0.35	17.77±0.74	82.6±5.1	82.2±5.3
	F	2	10.14±0.06	17.31±0.03	76.9±0.1	79.6±2.3
Guerrero	M	5	10.26±0.51	19.00±1.31	82.8±1.1	80.6±3.1
	F	4	9.72±0.17	16.84±0.46	75.7±1.0	74.3±1.3
Oaxaca	M	1	9.73	18.19	73.2	76.29
Chiapas	M	3	9.52±0.40	17.85±0.05	80.0±1.0	79.7±2.5
	F	1	9.51	18.88	72.8	74.9
Rhynchocyclus brevirostris						
Guerrero	M	1	9.01	19.01	78.0	67.0
	F	2	10.38±0.18	18.76±1.27	64.0±2.8	62.5±0.7
Oaxaca, Yucuyacua	M	2	9.17±0.21	17.98±0.57	77.47	—
Oaxaca, Miahuatlán	M	3	8.48±0.62	18.74±0.39	76.7±5.1	67.0±3.0
	F	4	9.71±0.11	17.79±0.63	73.8±2.1	65.1±0.9
Chiapas	M	6	9.48±0.54	18.98±1.29	81.3±1.2	71.7±3.2
	F	3	9.48±0.74	18.84±0.73	78.7±1.5	68.5±3.5
Basileuterus culicivorus						
Nayarit+Jalisco	M	1	7.35	19.65	60.9	55.0
	F	3	7.11±0.13	19.23±0.33	60.1±1.9	54.0±2.0
Guerrero	M	12	7.30±0.28	19.18±0.67	60.2±1.9	54.5±1.9
	F	9	7.63±0.31	19.21±0.48	57.8±2.3	52.6±1.0
Oaxaca	M	8	7.60±0.25	19.37±0.49	59.4±1.6	53.5±1.2
	F	1	7.59	18.74	57.0	52.0

A.O.U. (1983). The reason for this confusion appears to be frequent misidentification of *longirostris* as the similar species *H. constantii*; for example, a specimen from "Chilpancingo" collected by W. W. Brown (UMMZ 117296), originally identified as *constantii*, is actually *longirostris*. Seven specimens in MZFC and IBUNAM from semideciduous tropical forest (600–1200 m altitude) in the Sierra de Atoyac further document the presence of *longirostris* in the state of Guerrero.

Although Phillips (1966) describes the populations of the Pacific slope of Oaxaca as a separate subspecies (*masculinus*), we see the overall level of differentiation in plumage colouration as slight, and difficult to evaluate based on the small series available. Morphological measurements, however, indicate that the populations of southern Oaxaca and Guerrero have distinctly longer bills and tails than populations below the Isthmus of

Tehuantepec (Table 1). Hence, populations above the Isthmus of Tehuantepec indeed seem to form a group apart from those below.

Discussion

The new distributional records documented above, combined with avifaunal lists presented elsewhere (Navarro 1986, and in prep.), indicate that the avifauna of the Sierra de Atoyac is rich in species restricted to cloud forest and semideciduous tropical forest. A number of holes in species' ranges are filled, indicating that range disjunctions even in a region as well known as southern Mexico may often be due to inadequate representation in collections rather than actual absence of the species in intervening areas. Additional important sight records for the region have been gathered by Steve N. G. Howell and Sophie Webb (pers. comm.), including *Sarcoramphus papa, Falco albigularis, Spizaetus ornatus, S. tyrannus, Rostrhamus sociabilis, Dromococcyx phasianellus, Dendrocolaptes certhia, Cyanerpes cyaneus* and *Piranga leucoptera*, as well as several migrant species listed in Howell & Wilson (1990). In general, the need for additional exploration and collection in Mexico is emphasised by the new discoveries resulting from this project.

Of interest to a more general understanding of patterns of differentiation in the Mexican avifauna is the apparent pattern of subspecific variation in the two species treated above that occur in Jalisco, Guerrero, Oaxaca, and areas farther to the south. In both cases, somewhat surprisingly, the Guerrero population is most similar to the Jalisco population, rather than to the closer Oaxaca population. However, both species are found in lowland and foothill forests, so significant barriers may not exist between Guerrero and Jalisco. The generality of these geographic patterns must await more detailed studies of intraspecific differentiation in a wider array of species.

Acknowledgements

We would like to extend a warm thanks to our many field companions: without their dedication and hard work, little would have been accomplished in this project. We also thank the following curators and collection managers for access to collections under their care: Enriqueta Velarde and Noemí Chávez (IBUNAM), Robert Storer (UMMZ), Scott Lanyon and David Willard (Field Museum of Natural History), Lloyd Kiff and Kimball Garrett (Western Foundation of Vertebrate Zoology and Los Angeles County Museum of Natural History), John Hafner (Moore Laboratory of Zoology) and J. Van Remsen (Louisiana State University Museum of Natural Science). Thanks also to Laura and Fernando Villaseñor, Steve N. G. Howell and Sophie Webb for sharing their knowledge of Mexican birds. Special thanks to Claudia Abad de Navarro and Amy Peterson for standing long absences of their spouses, and for encouragement throughout. Financial support was provided by Facultad de Ciencias, U.N.A.M.; Dirección General de Asuntos del Personal Académico, U.N.A.M. (IN 201789); National Science Foundation Dissertation Improvement Program; National Geographic Society; and Field Museum of Natural History.

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Observations on the Inaccessible Island Rail *Atlantisia rogersi*: the world's smallest flightless bird

M. W. Fraser, W. R. J. Dean & I. C. Best

Received 3 April 1991

The diminutive flightless rail *Atlantisia rogersi* of Inaccessible Island is the sole extant species of its genus (Olson 1973). It is the only landbird endemic to the island and is the world's smallest flightless bird (Collar & Stuart 1985). The bird was described by Lowe (1928) from specimens collected in 1922, but the ecology of the bird remains little known, mainly because the remoteness of and consequent infrequency of visits to Inaccessible Island.

We present here the results of observations on the Inaccessible Island Rail made between October 1982 and February 1983 (M.W.F., I.C.B.) and in October 1989 (W.R.J.D.). The few other published data are discussed and the account in Collar & Stuart (1985) is expanded upon.

Study site and methods

Inaccessible (37°15′S, 12°30′W) is the second largest island of the Tristan da Cunha group, central South Atlantic. The topography and biota of the island are described by Wace & Holdgate (1976), Fraser *et al.* (1988) and references therein.

In 1982–83 the densities of rails in the island's four basic vegetation types were estimated by recording birds seen or, more commonly, heard as we walked slowly through the vegetation. The proportion of the island occupied by the vegetation types was estimated from our own observations and expressed in km^2 based on a planar area for Inaccessible of 16 km^2 (Dunne 1941), with an additional 1 km^2 to allow for steep cliffs.

Observations of individually-marked rails, nest watches and measurements of chicks were made at Blenden Hall in the west of the island. This site is the only extensive land area at sea level and is dominated by tall (up to 3 m) tussock grass *Spartina arundinacea*. Adults were sexed on size (males tend to be slightly larger than females), and differences in colour of their cheeks and ear coverts (Elliott 1957, Ryan *et al.* 1989). Opportunistic observations were made of rails elsewhere in the coastal lowlands, and on the island plateau where the vegetation is dominated by *Blechnum palmiforme* tree ferns, Island Tree *Phylica arborea* and a variety of ferns and sedges.

Results and discussion

Habitat choice and population size

The rail occurs in all vegetation types at Inaccessible Island, foraging also on exposed boulder beaches on and above the high-tide line. Population estimates made at the Blenden Hall study area were considered to be relatively accurate; elsewhere on the island few data were collected, thus estimates made there were crude and may be considered indicative only. In mixed tussock/*Blechnum penna-marina* fern vegetation (1 km^2) at Blenden Hall the density of full-grown rails was estimated to be 15 birds per hectare. Here and elsewhere the density in virtually pure tussock (4 km^2) was estimated to be 10 birds per hectare; in mixed upland vegetation (short ferns, tussock etc; 7 km^2) on the island plateau to be five birds per hectare, and in *Phylica*/tree fern *B. palmiforme* (also confined to the plateau; 5 km^2) to be two birds per hectare. No rails were recorded in a small area of short tussock on the well-drained cinder cones near South Hill, although this does not necessarily imply their complete absence from this habitat. The estimated island population of 10,000 rails is that reported in Collar & Stuart (1985). P. G. Ryan, *contra* Siddall (1985), calculated Inaccessible Island's planar area to be 13 km^2. This reassessment of its area does not change the proportions in which the vegetation types occur but gives an extrapolated population of 8400 rails. Such a revised figure is unlikely to be significant, however, as the estimate is, at best, crude and the surface area of the island is greater than the planar. In the breeding season, chicks would considerably raise the population—12 chicks were recorded in the Blenden Hall study site (1 ha) in December 1982. In 1989 the rails appeared to be most numerous in tussock grass patches occupying relatively moist sites in the lowlands, and in patches of sedges *Carex thouarsii* and *Scirpus sulcatus* on the plateau.

Hagen (1952) estimated the rail population in 1938 to be 1200 birds, while accepting that this was likely to be an underestimate. In 1952, the population was estimated at 5–10,000 birds (Elliott 1957). Extrapolating from observations made over a four-day visit to Salt Beach on the island's east coast in 1974, Richardson (1984) estimated 1–2000 breeding pairs. These rough estimates cannot be used to imply any changes in population size.

Tussock fires in 1872 and 1909 (Wace & Holdgate 1976) probably would have killed many rails. Post-fire recolonization by rails of tussock (which regenerates from seed and rootstocks) could take place from damp areas, unburnt vegetation and other refugia; thus the effects of fire on the rail population would be temporary. There apparently have been no fires or similarly catastrophic events at Inaccessible Island for over eighty years. It is likely, therefore, that at present the population is at carrying capacity and that regulatory mechanisms such as low fertility and delayed maturity operate to limit productivity (Ryan *et al.* 1989).

General habits

The Inaccessible Island Rail has been likened to a mouse in terms of the ecological niche which it occupies (Collar & Stuart 1985). This analogy is a fair one and may be extended to include the bird's general habits. Its swift, darting runs and moments of immobility and its foraging behaviour are reminiscent more of a mouse than a bird. It forages slowly and deliberately, but can run extremely fast when alarmed or in pursuit of a rival. When running the wings are raised and arched and the body lowered. When traversing or feeding in open ground, such as short vegetation or boulder beaches, it is extremely wary. It is active mainly in daylight, but also forages and calls at night.

In addition to the cover and protection afforded by tall vegetation, particularly tussock, the rails use natural connecting cavities under boulder beaches and small tunnels (formed by regular use) through *Blechnum penna-marina* and sedge mats for access and concealment. There is no evidence that rails excavate underground burrows, although Elliott (1957: 202) notes that a captive bird dug a hole "nearly a foot [30 cm] deep by the roots of a tussock plant". Full-grown rails and chicks will climb up *Phylica* and bundles of tussock to 1.5 m where the slope is less than *c.* 60°, extending and flapping their wings for balance and, probably, aided by their well-developed 'thumb claw'.

Inaccessible Island Rails occur singly, in pairs or in family groups of up to five birds which comprise parents and their two chicks and single subadult birds. Although the members of such groups stay close and generally in sight of one another, they maintain vocal contact almost continuously.

Food

The rail has a varied diet of plant and animal matter. Our observations do not add to the range of food detailed by previous authors (Rogers 1926, Hagen 1952, Elliott 1957, Richardson 1984). The rails were not recorded eating fish or bird carrion. Fish carrion occurs as beach strandings or seabird regurgitates; bird remains are readily available where carcasses are abandoned by Subantarctic Skuas *Catharacta antarctica*. At Gough Island, 350 km southeast of Tristan, this resource is exploited by a flightless moorhen *Gallinula comeri* (Watkins & Furness 1986) and at Inaccessible Island by the Tristan Thrush *Nesocichla eremita*. The rails ignored foods such as cheese and bread used to bait walk-in traps, and which were readily eaten by thrushes. Such partitioning might reduce feeding competition between the two species, although their diets do overlap (pers. obs). Rail chicks were fed invertebrates (see below).

Vocalizations and display

The Inaccessible Island Rail is highly vocal, employing a variety of often loud calls, presumably to communicate in the dense vegetation where visual contact is precluded. A commonly-used vocalization is a loud trill, similar to that of the Dabchick *Podiceps ruficollis* or the Cape Rail *Rallus caerulescens*. This trill is uttered by members of breeding pairs on meeting and in threat display between adults of different pairs or family groups. Confrontations between rival adults are accompanied by loud squealing followed by a prolonged twitter, or one bird squeals while the other utters a long, excited *keekeekeekeekee* . . . twitter, of varying length and ending *keekeechitrrrr*. The birds face each other, standing a few centimetres apart while their heads are lowered and bills pointed to the ground. Sometimes they then slowly circle about a point midway between them. After a short time one bird slowly retreats, or is driven off by the other following two or three skirmishes or a fast chase. The victorious bird then may utter a *weechup, weechup* call. A courtship display involves much the same vocalizations and movements, but ends with the birds moving off silently together. Courtship feeding takes place silently and involves the presentation of food (earthworms or centipedes) by the male to the female. The latter bobs its head prior to accepting the food.

Foraging adults give a slow, rather monotonous *tchik, tchik, tchok, tchik* . . ., a soft, enquiring *choptchaptchick* and a soft *tchik-tchuk* or *chip chip*. The last call is also given by incubating birds or when disturbed at the nest. A hard *chip* alarm call is repeated when Subantarctic Skuas fly overhead. This call prompts adults to become alert and chicks to become silent.

We were unable, because of the density of the vegetation, to determine the circumstances under which other calls were given. These calls include a soft *tik tik*, an aggressive *tchick*, a harsh rattling trill, a brief *schkreek*, a high-pitched, enquiring *tip*, a *queechick* rising on the *chick*, a *squick*, a twanging *chong chick*, a short *t-tchip* and a low, guttural *queechock*. Calls during incubation are detailed below. Chicks utter a repetitive *tchwip* contact call, similar to that of many young galliformes when following their parents. If visual contact with the adults is lost, the chick gives a more resonant *tchwee*. The call becomes louder and more frequent the longer the chick is separated from its parents.

Territoriality

The dense vegetation made observations of colour-ringed birds at Blenden Hall difficult, and sightings are likely to reflect the relative ease of observation of the birds as much as their movements. Nevertheless, our results indicated that individual rails and family parties tended to remain largely, but not exclusively, within small areas (0.01–0.04 ha). Skirmishes between adult birds, involving loud trilling and buffetting, were recorded when families or adults met. The high density of rails made such encounters frequent and necessitated what is likely to be a very loose and flexible territorial system.

Breeding

Apart from notes on the eggs (Rothschild 1928), nest and eggs (Fraser 1989) and broods of young (Broekhuysen & Macnae 1949, Hagen 1952, Richardson 1984, Fraser 1989), the breeding biology of the Inaccessible Island Rail remains largely undocumented.

Breeding season

Eggs or young have been found from October to February. Backdating the records of young (Broekhuysen & Macnae 1949, Hagen 1952, Richardson 1984) indicates that eggs are laid from October to January. In 1982 the first chick was recorded on 10 November, but a chick thought to be at least two weeks old was found on 18 November. There was a peak in the number of chicks in early to mid-December.

Nest

Nests are sited on the ground in low-growing ferns *Blechnum penna-marina* with sparse tussock, in sedges, at the base of tussock grass clumps or in ferns under dense cover of fallen tussock grass. An access track or broken tunnel through the vegetation runs up to 0.5 m from the nest entrance. The nest is oval or pear-shaped with an entrance at the narrower end. Nests may be thinly domed (through which the incubating bird may escape when disturbed), or more sturdily roofed over with the same material as the body of the nest. One nest measured 130 mm across and high and 170 mm in length. The internal diameter was 90 mm and entrance hole *c.* 40 mm in diameter. Nests are constructed entirely of dead tussock leaves (n = 4) or of dead sedges (n = 1), reflecting the vegetation type in which the nest is located. In tussock nests, the outer casing is constructed from broad curled leaves, whereas the cup is lined with finer strips. Elliott (1957) describes a nest at Salt Beach lined with "dead leaves", presumably of the apple *Malus* or willow *Salix* trees near which the abandoned nest was situated. In 1982, nest material was added to a nest containing two eggs in sedges on the summit plateau. Additionally, the entrance hole was almost completely built over following the initial discovery of the nest. Neither of the nests found at Blenden Hall was so altered. It is possible that this was due to a spell of wet and cold weather (the plateau may be enveloped in orographic cloud for many days, whereas at sea level the weather remains dry and relatively warm).

Clutch-size and eggs

Our observations, those of Broekhuysen & Macnae (1949) and Richardson (1984) and the comment of Hagen (1952: 197), suggest that a full clutch is two (n = 8). Rothschild (1928) exhibited a clutch of three eggs, collected at Inaccessible in 1927 or 1928. Although no further published details have been found, it is possible that these eggs came from two clutches. The eggs are pale buffy-white, creamy-white or greyish-white, with a thin scattering of small dark reddish-brown speckles and a concentration of brown speckles over slate shell marks at the broad end (Rothschild 1928; pers. obs.). The eggs resemble those of *Rallus* species we have examined. Mathews (1932) noted that the eggs are "almost indistinguishable from some varieties of the eggs of *Crex crex*".

Two eggs from one clutch measured 32.6 × 22.0 and 33.8 × 23.3 mm. The average mass of each of the eggs of one clutch weighed six times in the period four to two days before hatching was 8.7 ± 0.12 g. This is some 25% of the mass of the female, which averages 36.9 g (Ryan *et al.* 1989).

Incubation period

The incubation period of the Inaccessible Island Rail is unknown. Two clutches found on 7 October 1982 hatched on 12/13 October and 19 October, respectively. A nest found on 15 October 1989 contained two eggs which had not hatched by 24 October.

Incubation regimen and behaviour

Both sexes incubate. A watch was kept at one Blenden hall nest for three days before the first of the two eggs hatched. In 22.7 hours of observation, the female incubated for 9.0 hours (39.1% of the time), the male for 13.4 hours (58.4%), and the nest was unattended for 0.3 hours (2.4%). The average duration of incubation sessions was 50.4 ± 37.3 minutes (range 5–114 minutes) by the female (n = 7) and 80.7 ± 46.0 minutes (27–143 minutes) by the male (n = 9). The nest was unattended for an average of 3.3 ± 3.2 minutes (0.3–9 minutes; n = 10). Both sexes brought food to their incubating partner. Items were proffered at the nest entrance and accepted there by the incubating bird, or the latter left the nest in response to the other's calls and received the food up to 4 m from the nest. Identified food items were centipedes, earthworms and caterpillars. While incubating, the female ate small leafhoppers (Homoptera) caught on nest material at the nest entrance.

The female was present at the hatching of one egg, and was replaced by the male 30 minutes later. During incubation the female occasionally undertook nest maintenance (re-arranging tussock grass).

Changeover at one nest was preceded by either or both birds giving *chip chip* calls at intervals for up to 62 minutes. Such duets were initiated by either bird. The calls of the incubating bird became louder the longer its mate took to respond. On one occasion the incubating male trilled loudly in the nest in response to the *tchuck tchuck* of the approaching female, before emerging from the nest to meet her. Both birds entered the nest; the female then remained to incubate.

Other observations made during incubation were: (1) the incubating bird leaving the nest when its mate was within 1 m of it, the pair trilling loudly for up to 20 seconds and the relieving bird slowly entering the nest; (2) the incubating bird trilling loudly while leaving the nest in response to its mate's soft whistle, but returning after two minutes; (3) the male approaching the nest calling *chuck chuck*, but leaving after receiving no response from the incubating female; (4) the female offering a moth to the incubating male, both birds leaving the nest, the male returning to and entering the nest with the moth after 20 seconds; (5) the female trilling on the nest in response to trills from the male and other rails, but remaining in the nest.

Incubating birds often looked out of the nest in response to noises. On the first day of nest watching the incubating bird left the nest at the approach of the human observer, and gave soft *chip chip* calls while the nest was inspected or the observer took up his watching position. On the second day and subsequently, however, the rails sat tight and had to be gently eased off the nest to inspect the contents. Under such circumstances the male tended to sit tighter than the female. The incubating birds also accepted and ate earthworms from the observer's hand.

An incubating rail watched the approach and passing of a Tristan Thrush, but remained silent and motionless even when the latter was within 50 cm of the nest. A rail chick which ventured within sight of the nest retreated when the incubating female uttered a loud trill.

Hatching schedule and success

Hatching of two two-egg clutches took place at night or in daylight. In one clutch, one egg was pipping a maximum of 15 hours before hatching. The chick within the other egg was calling for a maximum of 45 hours before hatching. The interval between the hatching of the two eggs was a minimum of 23 hours and a maximum of 32 hours. The eggs of another clutch hatched a maximum of 12.5 hours apart. At this immediate pre-hatching stage the eggs weighed 8.5 g and 8.3 g. In one study nest the female carried a piece of eggshell from the nest chamber to the entrance tunnel, broke it and returned with the fragments into the nest.

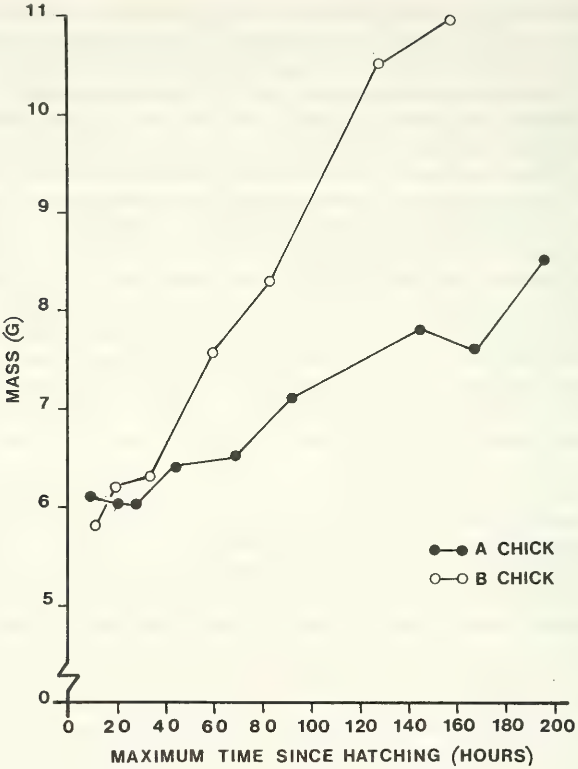

Figure 1. Growth of *Atlantisia rogersi* chicks.

Changeover of brooding birds followed the same procedure as for incubation, and was accompanied by extensive vocalizations.

Three (37%) of eight eggs found in 1982 were addled. Although the sample is small, it may indicate low fertility and a low breeding success. One of two eggs found in 1989 was damaged and would not have hatched.

Description, development and behaviour of chicks

Although specimens have been collected (Broekhuysen & Macnae 1949), the Inaccessible Island Rail chick appears not previously to have been described.

Day-old chicks are covered entirely in soft, black down 7–9 mm in length. Legs, feet and bill are black; gape silvery-white, inside of mandible tips black; iris dark brown. The bill is fleshy and soft and the egg-tooth white. The measurements (mm) of a day-old chick were as follows: culmen 8.0; bill width 4.0; bill depth 5.0; tarsus 11.0; outer toe 17.0; middle toe 19.5; inner toe 15.5; total length 60.5; mass 7.8 g.

Weight changes of a brood of two chicks are given in Figure 1. The egg-tooth disappeared two to seven days after hatching. A chick caught when

TABLE 1
Growth of *Atlantisia rogersi* chicks (mass in g, other measurements in mm)

Date	Mass	Culmen	Bill depth	Bill width	Tarsus	Outer toe	Middle toe	Inner toe	Hind toe	Folded wing*	Extended wing*
				CHICK 1 (approximately one month old at first capture)							
09.12.82	27.5	16.5	7.0	4.5		23.0	29.5	23.5	9.5		
10.12.82	30.3										
14.12.82	32.6	17.0	7.0	5.0	17.5	25.0	31.0	24.5	10.0	15.5	
16.12.82	31.1	18.0	8.0	5.0	18.0	25.0	32.0	25.0	11.5	18.5	45.0
21.12.82	31.2	19.0	8.0	5.0	21.0	25.5	32.0	25.5	12.0		46.0
				CHICK 2 (approximately two weeks old at first capture)							
16.12.82	18.9										
18.12.82	19.9	13.0				22.0	26.0	20.0	11.0		
21.12.82	17.2										
22.12.82	18.1	13.5									
23.12.82	18.4	14.0	5.5	5.0	18.0	25.5	29.5	26.5	11.0	12.0	28.0
21.01.83	32.6	19.5	7.0	5.0	20.5	26.0	32.0	26.5		26.0	45.0

*excluding down/feathers

approximately two weeks old had lost all its natal down when recaptured five weeks later. The growth of this (no. 2) and of another chick are given in Table 1.

The well developed 'thumb claws', which on chicks are as large as those of adults, have not been commented upon before, apart from Lowe's (1928: 116) observation that the "thumb is provided with a very prominent claw". These relatively large, exposed structures may assist the birds in climbing tussock.

Chicks walked within two hours of hatching and left the nest within a day of hatching. Initially, the chicks remained in the entrance tunnel, but 28 hours after the hatching of the first chick, were led away from the nest. The chicks returned to the nest periodically during the day and remained therein overnight with one parent for the first two nights. Chicks were also brooded away from the next by the male during the day. Chicks basked in warm sunshine between feeding by adults. Four days after hatching the chicks moved up to 5 m from the nest and climbed up to 1 m in sloping bundles of tussock, extending their wings for balance. Chicks made exploratory pecks at the ground and vegetation soon after leaving the nest and were observed attempting unsuccessfully to catch leafhoppers seven days after hatching.

Chicks were shepherded by one parent while the other foraged. Food items brought by the foraging adult were fed directly to the chicks or via the attendant adult. Chicks pecked at the parent's bill tip even when the latter contained no food. In order of frequency, identified food items comprised centipedes, earthworms, caterpillars, moths and amphipods.

Adult rails vigorously defended their chicks against Tristan Thrushes. A female rail attacked a thrush which had approached the former's nest containing chicks. The rail repeatedly ran up to and pecked the thrush, retreating into cover between attacks. The thrush then followed the rail into dense tussock, emerging and flying off approximately one minute later. The rail then reappeared and visited its nest briefly before moving away. During this encounter the brooding male was silent and motionless. On another occasion, a thrush landing near the rail chicks was immediately rammed by the female rail and flew off.

Predation

None of four chicks ringed one or two days after hatching survived more than 10 days after leaving the nest. One was killed by Tristan Thrushes and circumstantial evidence suggested that thrushes also killed the remainder. The two study nests at Blenden Hall were damaged by thrushes (which removed the top third of the nests, exposing the chamber). Parent rails were vigorous in their defence of chicks against thrushes (see above). Adult rails were eaten by Subantarctic Skuas (Hagen 1952, Fraser 1984, Ryan & Moloney 1991). No other birds are known or are likely to prey upon rails at Inaccessible. Anti-predator avoidance by adult rails involved uttering alarm calls and moving quickly into dense cover when a skua flew overhead or when a thrush approached. Adult rails were observed to draw in their heads and fluff up their plumage when confronted by a thrush before or as they (the rails) rapidly took cover. On one occasion a thrush and a rail passed within 10 cm of each other but ignored one another.

Conservation

The Inaccessible Island Rail is abundant within its restricted range, and is under no immediate danger of extinction. Potential threats to its welfare exist, however, notably the introduction of mammalian predators, none of which presently occurs on the island. Cats *Felis domesticus*, Black Rats *Rattus rattus* and House Mice *Mus domesticus* occur on Tristan where their impact on the native biota is unquantified. Mice have been found aboard Tristan longboats bound for Nightingale Island (Richardson 1984). Rats have infested fishing vessels working around the Tristan archipelago (Richardson 1984) and can reach islands on floating refuse (Moors & Atkinson 1984). Although visits to Inaccessible Island are infrequent, each carries the risk of introducing these and other harmful alien organisms to the island. The stringent precautions necessary to prevent the accidental introduction of alien species appear not to be applied or to be ineffective, as demonstrated by the sighting of a rat near the South African weather station at Gough Island in 1983 (Wace 1986a, b, Watkins & Furness 1986). Some twenty species of alien plants and a number of alien invertebrates occur on Inaccessible Island (Holdgate 1965, Wace & Holdgate 1976), but none is yet known to have an adverse effect on the rail or other native fauna. Indeed some, such as centipedes, may be an important food item of rails.

Collar & Stuart (1985) propose and discuss conversation measures for the Inaccessible Island Rail. These include, as a safety measure, the introduction of birds to Gough Island or nearby Nightingale Island, which have a similar climate and vegetation to Inaccessible. Such introductions would, however, expose these islands' endemic invertebrate assemblages to predation and possible extinction (W.R.P. Bourne, in Collar & Stuart 1985). In addition, the rails would remain at risk from the accidental introduction of mammalian predators. We consider the establishment of captive breeding stock the most useful conservation measure. Captive birds would also facilitate scientific research and promote public awareness of the rail and other wildlife of the Tristan da Cunha islands. Little is known, however, of the birds' long-term response to captivity. Rails kept as pets by Tristan islanders apparently did not live for long (N. Green). Broekhuysen & Macnae (1949) kept adult and young rails for "some days", feeding them "woodlice and worms", but all died. Elliott (1957) noted that rails "travel well in a small cask". Although it is not known how long he kept the birds, they became "established" and were fed "amphipods and isopods . . . and cranberries *Empetrum*".

Past attempts at farming on Inaccessible Island have been largely short-lived and unsuccessful. Nevertheless, agricultural development of the island is still advocated as a means of supplementing the Tristan islanders' diet (e.g. Helyer 1981). Apart from the detrimental effects on the indigenous biota of introduced crop plants and livestock such as sheep, increased traffic would seriously heighten the risk of introducing alien mammals from Tristan.

The Tristan da Cunha Conservation Ordinance, 1976, provides for the protection of all but two species of bird at Inaccessible (Rockhopper Penguin *Eudyptes chrysocome* and Great Shearwater *Puffinus gravis* may be harvested there by Tristan islanders). The island does not have nature reserve status in terms of the ordinance, however. Such formal declaration, which should include the prohibition of agriculture, is highly desirable for the rail, the island's other landbird species and its seabird colonies (Fraser *et al.* 1988). Inaccessible Island also merits registration as a site within the World Heritage Convention of 1972 because of its endemic fauna and because it is undisturbed and free of introduced predators, and is one of the least man-modified islands in the world.

Acknowledgements

M.W.F. and I.C.B. were members of the Denstone Expedition to Inaccessible, supported by the Denstone Expeditions' Trust and led by M.K. Swales. W.R.J.D. was a member of the Third South African Expedition to Inaccessible Island and he thanks J. Cooper and P.G. Ryan for the arrangements and organisation of the trip and the South African Department of Environment Affairs for transport and logistic support under the auspices of the South African National Antarctic Research Programme. Both expeditions were endorsed by the Island Council and successive Administrators of Tristan da Cunha. For their comments on the manuscript we thank J. Cooper, L. Fraser, P.G. Ryan, W.R. Siegfried and M.K. Swales.

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Comments on the nomenclature and dates of publication of some taxa in Bucerotidae

by M. Ralph Browning

Received 5 April 1991

Modern literature on Bucerotidae contains several scientific names that are used or cited incorrectly. The most notable problem is the concurrent use of two different specific names for the Southern Ground Hornbill (*Bucorvus*), a species occurring from Kenya to northern Angola, Zimbabwe, Mozambique and South Africa.

Specific name of the Southern Ground Hornbill

Historically the Southern Ground Hornbill has been known by three specific names. *Bucorvus cafer* (Schlegel, 1862) was used by most early authors (e.g. Ogilvie-Grant in Ogilvie-Grant & Sclater 1892, Sclater 1924). Roberts (1926) proposed the name *Bucorvus schlegeli* for the species to replace *cafer* Schlegel, a name he believed to be preoccupied by *caffer* Sundevall (1851). However, because Sundevall did not use the term "caffer" as a scientific name (Gyldenstolpe 1926, Sclater 1930, Friedmann 1930), most authors (e.g. Chapin 1939, Roberts 1940) continued to use *cafer*. Peters (1945), on the other hand, listed the Southern Ground Hornbill as *Buceros leadbeateri* Vigors, 1825, a name that was infrequently cited in the early literature (e.g. Cabanis & Heine 1859–1860, Finsch & Hartlaub 1870, Elliot 1877–1882) as a synonym of *Bucorvus abyssinicus* (Boddaert, 1783), the Northern Ground Hornbill, which occurs from Sierra Leone to Senegambia, Nigeria, Sudan, Kenya and Ethiopia. Sanft (1960) disagreed with Peters, again synonymized *leadbeateri* with *abyssinicus*, and used the name *cafer* for the southern species.

The specific names *cafer* and *leadbeateri* are in concurrent use in the recent literature for the Southern Ground Hornbill. The name *cafer* is used by some authors (e.g. Devillers 1977, Benson & Benson 1977, Kemp & Crowe 1985, Kemp 1988a, Lewis & Pomeroy 1989, Short *et al.* 1990), and the name *leadbeateri* by others (e.g. Clancey 1964, 1980, Kemp 1974, 1979, 1982, Kemp & Kemp 1980, Newman 1983, Irwin 1981, Maclean 1985, Vernon 1986, Wood & Schnell 1986, Tarboton *et al.* 1987, Williams 1988, Ginn *et al.* 1989). Schmidl (1982) lists the species as "*cafer* (=*leadbeateri*)" and Walters (1980:119) lists the species as "*leadbeateri* . . . (=*B. cafer*)." A recent ornithological text book (Gill 1990) and recent issues of *Zoological Record* refer to the species as *B. leadbeateri*. The International Species Information System (ISIS), a list of species used by zoos, lists the species as *leadbeateri*. None of these sources comments on their reason for using either name. Because of the continuing various applications of *cafer* and *leadbeateri*, a review follows.

When Peters (1945: 272) revived *leadbeateri* for the southern species, he commented only that the locality "Africâ interiori Septentrionali" (Vigors 1825: 460) was "almost certainly an error for 'Meridionali', the description applies to the South African bird." Sanft (1960) stated (in translation) that it was evident from Vigors' (1825) description of the colour ("fusco-nigrae") and bill length ("ad frontem $7\frac{3}{4}$ unc") that *leadbeateri* applies to a juvenile; because the locality included "Septentrionali", he concluded that Vigors' specimen was of *B. abyssinicus*.

Immatures of both species of ground hornbills and worn females of the Southern Ground Hornbill are sooty-brown, and the bill length (197 mm) of Vigors' specimen is within the range of adult females of both species (Kemp 1988a). Although not mentioned by Sanft (1960), Vigors (1825) described the soft parts of *leadbeateri* as "regione ophthalmicâ guttureque nudis coccineis, caeruleo-variegatis . . ." The differences between the species of ground hornbills are summarized in Table 1.

Vigors (1825) described the bill of *leadbeateri* as black. The bill in both species of ground hornbills is black, but there is a pale spot on the proximal end of the upper mandible in *B. abyssinicus* (Table 1). Kemp (1979) characterized the spot as yellow, but the spot is more reddish than yellow (C. Falzone, *in litt.*; colour slides on file). In old specimens the spot

TABLE 1
Colouration of the circumorbital and gular skin and colour of the upper mandible in *Bucorvus abyssinicus* and the Southern Ground Hornbill[1]

Characters	*Bucorvus abyssinicus*	Southern Ground Hornbill
Skin colour		
immatures	blue grey	pale grey
adults		
males	blue, some red spots on throat; acquired in 1–3 years	red; acquired in 3 years
females	dark blue; acquired as in males	red, sometimes violet-blue patches on side of face; acquired in 6 years
Upper mandible	black with reddish-yellow spot	entirely black

[1] Sources: Kemp (1979), Kemp and Kemp (1980), Kemp *in* Fry *et al.* (1988), C. Falzone (*in litt.*)

is yellowish. The spot in *B. abyssinicus* appears as a small paler colour in chicks, becomes larger and reddish in six months, and is similar in size and colour to that of the adult in two-year-old birds that still lack the opened cylindrical casque of adults (C. Falzone, *in litt.*).

I conclude that Vigors' (1825) description of the facial colours and colour of the upper mandible cannot apply to *B. abyssinicus*. Although Vigors (*op. cit.*) used the term "Septentrionali" for the locality of *leadbeateri*, he may have been referring to what is now the northern part of the range (e.g. Kenya) of the Southern Ground Hornbill, or he may have simply erred. I agree with Peters (1945) that regardless of the original locality, the original description of *leadbeateri* applies to the southern species of *Bucorvus*. Therefore, the Southern Ground Hornbill should be known as *Bucorvus leadbeateri* (Vigors, 1825), with the type locality Lower Bushman River, eastern Cape, South Africa, as restricted by Vincent (1952).

Generic name for the species birostris, griseus *and* gingalensis

Gloger (1841–42) proposed the generic name *Meniceros* for *Buceros rhinoceros* and Bonaparte (1854) used the generic name as "*Meniceros*, Gloger.-34. ginginianus, Lath." Kemp (1979) and Kemp & Crowe (1985) adopted *Meniceros* Bonaparte, 1854 as the generic name for the species *birostris* and *griseus* from India and for *gingalensis* (now a subspecies of *griseus*). However, *Meniceros* Bonaparte does not constitute a new generic name; it is merely a new combination and does not affect authorship of the name (International Commission on Zoological Nomenclature 1985, Art. 50(c) (i)). Kemp (1988b) correctly used *Ocyceros* Hume, 1873 (type species by subsequent designation, *Buceros birostris* Scopoli), as the earliest available generic name for *birostris, griseus* and *gingalensis*.

Correct spelling of the specific name minillae

The name *minillae*, used for a subspecies of *Penelepides panini* in Peters (1945) and a full species in Kemp & Crowe (1985) from Luzon, Philippine Islands, was spelled as *minillae* by some authors (e.g. Sanft 1960, Kemp & Crowe 1985) but as *minilloe* by most authors (e.g. Peters 1945, du Pont 1971, Gonzales 1983). Kemp (1988b: 325, Figs 3 and 6) spelled the name as "*minillae*" in the figures but in the captions added "Read *minilloe* instead of *minillae*." The name was originally proposed by Boddaert (1783) with the ligature as *æ* (=ae), not *oe*.

Validity of Rhynchaceros *Gloger, 1841*

Kemp & Crowe (1985) used the name *Rhynchaceros* Gloger as a subgeneric name for *Tockus hemprichii, T. fasciatus, T. bradfieldi,* and *T. alboterminatus*. Roberts (1931: 240) considered the name *Rhynchaceros* Gloger preoccupied. He commented only that "this will be discussed in another paper . . ." and proposed *Protokus* as a new generic name. Peters (1945), who synonymized *Protokus* and *Rhynchaceros* Gloger, 1841 with *Tokus*, concluded that Roberts' (*op. cit.*) comment "apparently" referred to *Rhynchoceros* Berthold, *in* Lattreille, 1825. Although not stated by Peters (*op. cit.*), or discussed later by Roberts, Berthold's (*in* Lattreille 1825) proposal of the name as "*Rhychoceros*" [sic] followed only by "[Tadorne]" does not constitute a valid name (I. C. Z. N. 1985, Art. 12(c)). Therefore, Gloger's name must stand, with *Protokus* as a junior synonym.

Correct dates of some original descriptions

The following names were cited incorrectly by Peters (1945), Sanft (1960), or others:

Buceros convexus Temminck, 1831. Sanft (*op. cit.*) gave the source as 1832 and plate 520, livraison 89 of Temminck's "Planches coloriées." The name *convexus* was first proposed in livraison 88, dated 1831 (Sherborn 1898).

Bycanistes subquatratus Cabinis, 1881. The original description of *subquatratus* was in the *Journal für Ornithologie* Heft 4 for 1880, the year given by Peters and Sanft. The early Hefte of this journal were issued irregularly or distributed late (see Browning & Monroe 1991). Because Heft 3 of the *Journal für Ornithologie* appeared in December 1880 (Reichenow & Schalow 1882), it is reasonable to assume that Heft 4 would not have appeared until early in 1881.

Rhinoplax Gloger, 1841 and *Rhynchaceros* Gloger, 1841. Peters (1945) gave the source for both generic names as "Gloger, Hand-und Hilfsb. Naturg., 1842 (1841)." The sixth part of Gloger's work, i.e. up to p. 476, was issued in October 1841 (Charles W. Richmond, notes in Division of Birds, Smithsonian Institution), and the title should be abbreviated as Gemein. Handb. und Hilfsb. (Browning & Monroe 1991).

Acknowledgements

I thank C. Falzone, Dallas (Texas) Zoo, for her comments and colour slides on the soft part and bill colouration in *Bucorvus*. Appreciation is extended to K. Hastings (ISIS) for her comments on the scientific names of the Southern Ground Hornbill. I also thank C. Falzone and S.L. Olson for reading an early draft of the manuscript and R.C. Banks, who made many useful comments and suggestions for the present version.

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Colonization of dry habitats by the Song Thrush *Turdus philomelos*: is the type of nest material an important constraint?

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Received 10 April 1991

Introduction

Being better adapted to nesting high in trees (when there is no bush layer), to feeding in drier places and more frequently in open areas (Siivonen 1939, Glutz & Bauer 1988, Tomiałojć & Lontkowski, in prep.), the Song Thrush *Turdus philomelos* theoretically should cope better with life in dry, urban or Mediterranean habitats than the Blackbird *T. merula*. In fact, the opposite is the case, which constitutes an interesting ecological problem. It may be speculated that the reason may be either that some other constraint on its ecology outweighs the factors favourable to the Song Thrush, mentioned above, or that the Blackbird started to colonize these areas so much earlier that it has managed more thoroughly than the Song Thrush to adapt in other important (but less obvious) ways.

Historical data available so far do not support the second suggestion (Cramp, 1988, Glutz & Bauer 1988). Another suggestion is that the Song Thrush is out-competed by the more adaptable Blackbird (Dyrcz 1969); but this seems an unlikely explanation of the problem under consideration, since in rural and urban British and Czechoslovakian habitats both of them, not just the Blackbird, maintain densities much higher than elsewhere (Davies & Snow 1965, Cramp 1988, Stastny *et al.* 1987). This last point will be reconsidered in detail elsewhere (Tomialojć, in prep).

In geographical terms the question is, why the Song Thrush has a very restricted breeding distribution in the Mediterranean region (and in the Eurasian forest-steppe transitional zone). These areas remain outside its main breeding range, though they are regularly visited on migration or in the winter. Isolated breeding areas occur only in higher (more humid?) parts of the Spanish Cordillera Central, Pyrenees, Mont Ventoux, Appennines, Anatolian mountains and Caucasus (Glutz & Bauer 1988, Blondel 1990). This is the more surprising since the apparently more humidity-dependent Blackbird maintains dense breeding populations in the southern part of the western Palearctic.

I hypothesize here that in both types of habitats, urban and Mediterranean, the Song Thrush has a problem with the construction of its peculiar nest. Under dry climatic conditions it probably cannot plaster the inner parts of its nest for a whole complex of reasons: the process of wood rotting seems to be inhibited or prevented in a dry climate, soft-timber trees are rare, old trees become scarce under fire-management regimes, and finally, wood pulp even if present may be too dry for nest plastering. The last obstacle may apply also to the use of clay, mud or dung.

Material and results

One of the noteworthy differences between European Song Thrush populations lies in the kind of nest material that they use. As has been described by Siivonen (1939), Bocheński (1968) and Glutz & Bauer (1988), the nest consists of two or three layers. In contrast to the analysis made by Siivonen, who concentrated on the variability in the outer-layer structure, here we focus attention on the inner-layer materials, as they are very specific in the Song Thrush in comparison with other thrushes (Bocheński 1968). The inner layer of a Song Thrush nest may be made in three different ways:

type 1: exclusively of wood pulp, which directly adjoins the outer layer built of mosses, lichens, dry grasses, leaves or twigs;

type 2: similar to above, but with an additional (median) layer of mud or clay under the wood pulp;

type 3: no wood pulp at all, the inner layer consisting mostly or entirely of earth or dung.

These three types show interesting geographical and ecological patterns of distribution.

Our own data were collected in the Bialowieża National Park during studies of the breeding ecology of the Song Thrush and Blackbird populations inhabiting an undisturbed primeval forest (Tomialojć &

TABLE 1

Percentage share of the various types of Song Thrush nests in samples from different parts of central and northern Europe

	n	Type 1	Type 2	Type 3
Forests of Finland (Siivonen 1939)	63?	all/most	?	0
Forests of Leningrad Province (Malchevskiy & Pukinskiy 1983)	195	most	a few	0
Bialoweiża primeval forests (this study)	166	94.6	5.4	0
Forests and woods of southern Poland (Bocheński 1968, and *in litt.*)	111	63	30	6
Secondary and natural habitats in Czechoslovakia (Pikula 1970)	121	17.1	22.0	57.8

Note. Differences between the Bialowieża and Czechoslovakian samples are highly statistically significant ($P<0.001$, χ^2 test).

Lontkowski, in prep.). Other data were extracted from Z. Bocheński's collection stored in the Department of Systematic Zoology and Evolution of Animals (Cracow), and from the Polish nest-record scheme run by T. Wesolowski, Wroclaw. These data (Table 1) show that there is a clear decrease in the proportion of type 1 nests as one proceeds from primeval forest habitats to anthropogenic habitats. This is paralleled to some extent by a geographical trend; thus in the forests of Finland type 1 occurs almost exclusively (Siivonen 1939), in central Europe the situation is diverse (see below), while in Great Britain types 2 or 3 seem to prevail, especially among the Hebridean population (Witherby *et al.* 1940).

Table 1 requires some comments. In the Bialowieża National Park the proportion of type 2 nests may depend on habitat. They constitute 7.2% of the sample from river-side ash-alder forest ($n=55$), 3.9% from oak-hornbeam or hard-wood forest ($n=103$), and 6.6% in mixed coniferous stands with some soft-wood deciduous trees ($n=15$). The differences are not statistically significant, probably because the samples are too small. The total sample size from the Bialowieża National Park is much larger (403), but in earlier years the construction of nests was evaluated only by inspecting them from the outside, without crushing the nest walls. Hence it was impossible to distinguish between types 1 and 2. All these data nevertheless strongly support the conclusion that not a single nest in the sample represented type 3.

It should be stressed that the Bialowieża sample comes exclusively from primeval forest, while the other samples are of mixed character, containing various proportions of nests from habitats transformed by man. There is a strong indication that wood pulp is largely used in extensive natural or semi-natural forests, while in other habitats other materials may appear. For example, in data from the Polish nest-record scheme wood-pulp nests constituted 92.5% of the forest sample ($n=1140$), but only 87.4% of the sample from rural and suburban woodlands ($n=206$). Moreover, among the nests without wood pulp ($n=64$), including 12 nests without any plastering, the majority (83%) were from the southern half of Poland, and only 11 (17%) from the northern half. Another sample from southern Poland (Bocheński 1968, and *in litt.*), composed of nests collected in semi-natural forests and in suburban woodland in Cracow, also supports the suggestion that anthropogenic habitats contain more nests of type 3: whereas among his nests from natural habitats type 3 was represented by only 1% ($n=95$), in a sample of 16 nests from Cracow suburban woodland such nests constituted 30%. This makes one suspect that the Czechoslovakian data largely originate from habitats transformed by man, and indeed this is the case; 72% of them are from transformed or anthropogenic habitats (Pikula 1970).

Discussion

Before evaluating these differences in the use of nest materials one should try to answer the question, to what extent the local climate may influence a Song Thrush's ability to construct a proper nest. It is well known that birds, including Song Thrushes, usually build their nests during the early morning hours (e.g. Siivonen 1939, our own observations), though this period of the day must also accommodate other competing activities such as territorial defence, singing and foraging. One may suspect that the higher humidity in the early morning is the main reason. As regards the Song Thrush, detailed observations of captive pairs (Siivonen 1939, Stahl 1987) have shown that the female before plastering her nest regularly soaks the material (wood pulp, in the cases observed) in water. All nests found during the construction phase either in Finland or in Poland were very wet, obviously too wet to have been softened by saliva alone (as suggested in some handbooks). Therefore one may suspect that the absence of water or morning dew in places with a dry climate may be a serious hindrance for breeding Song Thrushes. The Blackbird seems to be less dependent on the humidity of the local climate for two reasons: the ability to build some nests almost devoid of a mud-layer, and the preference for locating nests on a more solid foundation (Bocheński 1968, Tomialojć, in prep). Song Thrush nests, which are often poorly supported, sometimes almost hanging in the branches, in order to be solid enough to stand up to such situations must be plastered with soaked material, either wood pulp, mud, earth or dung. In some habitats this condition obviously cannot be fulfilled.

The pattern of nest-lining distribution in Europe shows some conformity with the advance of colonization of urban areas by the Song Thrush. It is generally acknowledged that the western European and some southern European populations of this species give evidence of much older and more advanced adaptation to urban and suburban conditions than the northern and eastern populations (Cramp 1988, Glutz & Bauer 1988). The British population in particular has been thriving for almost 100 years in the man-made environment which has been in the process of formation since late Neolithic times (Simms 1971, Kirby 1987). Very intensive forest management, involving the practice of coppice-with-standards, for centuries kept British woodlands poor in rotten wood; and this material was probably even scarcer in farmland. This may have forced the British population to turn to substitutes such as earth or dung, potential materials which are usually wet under British climatic conditions.

It is interesting to note that the Song Thrushes introduced in the southern hemisphere from Britain, and almost certainly taken from anthropogenic habitats, 'brought with them' the secondary habit of using mud, clay or dung for nest plastering. This is especially clear in Australia, where in the rather dry climate of the Melbourne area no wood pulp, only earth is used (Pizzey 1980). In New Zealand, with a more humid, oceanic climate and many introduced European trees, the use of mud seems to predominate locally (Falla *et al.* 1967) but wood pulp, with some earth occasionally included, is said to be the usual material (Oliver 1955). This suggests that what was, presumably, an enforced 'preference' was largely reversed when conditions were again suitable for reversion to the original habit.

In continental Europe the colonization of urban habitats by Song Thrushes has been more recent, probably in part because of the lesser extent of green spaces and the drier local climate of cities, chiefly central European ones. Nevertheless, the species began to be reported from urban habitats during the late 19th century, originally mainly from German territories (Schuster 1904, Glutz & Bauer 1988). By 1960 this colonization had spread eastwards to reach cities of western Poland such as Szczecin and Wroclaw and, less certainly, Gdańsk (Dyrcz 1963, Graczyk 1963). More recently, however, there has been a retreat from Polish and some German and British cities (Simms 1971, Tomialojć & Profus 1977, Bezzel 1982, Anon. 1984, Luniak 1990, Tomialojć 1990), which has been tentatively attributed to the increasing human impact on the urban environment, especially the elimination of the bush and ground-litter layer in parks. Eichler (1986) suggested that shortage or deterioration of the quality of available food, due to chemical pollution, might be the reason, though he was aware of the fact that the Blackbird in spite of its similar diet was continuing to increase in the same cities. Both reasons seem improbable in view of the well known ability of Song Thrushes to nest high in trees and to forage in open areas, as well as the fact that Blackbirds continue to prosper. Hence, problems with nest construction might be the main cause.

In this connection a contrast between the situation in Poland and Czechoslovakia seems to be especially intriguing. It appears that while in several Czechoslovakian cities Song Thrushes are quite numerous breeding birds, e.g. reaching densities of 53 pairs per 10 ha in Prague parks (Bialek *et al.* 1980, Stastny *et al.* 1987), or of 8.4–11.7 pairs per 10 ha in Ostrava (Pavelka 1988), in urban parks in the Polish cities of Legnica and Wroclaw, not very distant and almost identical structurally with those in Ostrava, Song Thrush densities are below 2 pairs per 10 ha and are decreasing constantly to the point of local extinction (Tomialojć 1970, Tomialojć & Profus 1977, R. Cisakowski, in prep.). It seems that food resources cannot be responsible, as Polish urban parks are known to abound with earthworms and other invertebrates (Dyrcz 1969), and Blackbird populations are dense, though less dense than in Czechoslovakia. Hence two other possibilities may be invoked: difficulties in nest construction, or differential predation pressure. I have no quantitative data adequate for testing the second possibility so far, though there are some indications that the numbers or efficiency of corvid and mustelid nest-predators may be higher in Polish than in Czechoslovakian cities.

There is still one difference between most Polish and Czechoslovakian territories: in the annual level of precipitation. In Polish lowlands it is mostly 450–650 mm only, while in Polish mountains and in Czechoslovakia it is 650–1200 mm per year (Steinhauser 1970). Higher precipitation may influence positively both the food resources and the ability to use earth for nest plastering.

From what has been said it will be apparent that Song Thrushes in urban areas, as also in farmland and intensively managed woodland, may have difficulty in collecting suitable material for lining their nests. Some populations, chiefly those living in more humid climate, have 'solved' this problem by using secondary types of material (earth or dung), others have not done so, while still others, in primeval or natural forests, have not been forced to change their original habit. It may be that northeastern Polish, Russian and Scandinavian populations are unable to colonize cities because they are too conservative in their use of nest-lining materials, and not necessarily because they are unable to overcome the barrier created by their shyness.

It would be of interest to make a comparative study of the use of nest-lining materials by Song Thrushes in different habitats in Britain, concentrating on populations in urban areas, farmland, and the last-remaining extensive forests such as the New Forest or old oak woodland. The results could falsify the interpretation offered above.

Under present conditions of wholesale deforestation and dry climate, it seems certain that Song Thrushes attempting to nest in Mediterranean lowland habitats would face similar problems to those in central European cities and parks. If my explanation is correct, then the Italian Song Thrushes nesting at lower montane elevations should show a clear preference for stream- or river-valley habitats, and should avoid dry south-facing slopes. It is intriguing also why this species avoids nesting in the anthropogenic landscape not only of Italy, but also of the northern slopes of the Alps in Switzerland (Glutz & Bauer 1988). There may of course be some other constraints, which would need careful evaluation.

More generally, it may be suggested that limitations imposed by the need for special nest materials should be investigated in other species where the reasons for limits of range or breeding habitat are not immediately obvious. Under urban conditions of central European cities it may be impossible for species such as the Chaffinch *Fringilla coelebs* or Long-tailed Tit *Aegithalos caudatus* to find enough mosses or lichens to construct or camouflage their nests. It is well known that both groups of plants tend to disappear from badly polluted urban and suburban habitats, so that it can hardly be coincidence that birds that make extensive use of mosses and lichens in their nests show a clear decline in big cities (Tomialojć & Profus 1977, Luniak 1990), while still prospering in natural forests (Tomialojć *et al.* 1984, Tomialojć 1990).

In the Mediterranean region, there are a number of species which do not breed although they are very common in the rest of Europe. One group consists of species that prefer fairly humid habitats even in more northerly areas: *Prunella modularis, Acrocephalus palustris, Sylvia borin, Phylloscopus sibilatrix, P. trochilus, Regulus regulus.* The first and last of these use a lot of moss, usually wet, for building their bulky nests. The others build their nests of dry fragments of vegetation (leaves, grasses, twigs), which under central European conditions tend to be flexible and soft if collected in the early morning when humidity is high. Perhaps even more surprising is the avoidance of Mediterranean lowland habitats by species tolerant of relatively dry places such as, in addition to the Song Thrush, *Phylloscopus collybita, Anthus trivialis* and *Emberiza citrinella.*

I suspect that most of these species do not breed in southern European lowlands not necessarily because of high temperature, food shortage etc., but because they face unknown problems of nest construction or nest concealment, or because they would suffer too high nest mortality from a diverse array of mammalian, ground or climbing predators. To falsify this hypothesis, comparative studies of nest construction and breeding biology of central European and Mediterranean, conspecific or congeneric populations would be necessary.

Acknowledgements

I thank Janusz Markowski who many years ago turned my attention to the variability of the Song Thrush's nest material, and to Jan Lontkowski who helped much with the field work. Zygmunt Bocheński's and Tomasz Wesolowski's nest-record data and critical comments on this paper are gratefully acknowledged, and I am also obliged to David Snow for his valuable comments and for considerably improving my English.

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Weights of some birds from Fiji

by Michael K. Tarburton

Received 25 April 1991

As there is a paucity of recorded body weights for birds from the South Pacific in both the literature and in museum data those recorded from mist-netting operations in Fiji are presented here along with some obtained from the National Museum of New Zealand. As workers begin to investigate topics such as flight, ecological variations, taxonomy, energetics and growth rates, the need for weights of free-living birds from the low latitudes of the South Pacific will increase.

The bulk of these data were recorded on Ohaus triple beam balances between January 1974 and December 1976. The remainder were measured on Pesola spring balances. All birds were free flying adults unless otherwise stated. The island of origin and, where known, the sex of the bird are shown and apply to succeeding data until changed. The major netting sites on Viti Levu were the mountain forests of Nadarivatu and the Tailevu lowlands.

The order used is that of Walters (1980) and the nomenclature is that used by Clunie (1984). All measurements are given in grams.

Sula sula RED-FOOTED BOOBY. Vatu-i-Ra: 773, 773, 893, 925, 978, 998, 998, 1010, 1041. Yabu: 915.

Sula leucogaster BROWN BOOBY. Yabu: 1100, 1300, 1400, 1400, 1450.

Puffinus pacificus WEDGE-TAILED SHEARWATER. Bulia: 222, M 236 (thin birds).

Fregata ariel LESSER FRIGATE BIRD. Vatu-i-Ra: F 1021, 1133. Ono: M 625, F 975. Yabu: M765, F 810, 885, 990.

Fregata minor GREAT FRIGATE BIRD. Yabu: M 1300, F 1100.

Egretta sacra REEF HERON. Ono: 620, 695.

Circus approximans PACIFIC HARRIER. Vatulele: M 515. Viti Levu: M 550. Ono: M 486.

Accipiter rufitorques FIJI GOSHAWK. Ono: M 209.

Gallus gallus JUNGLE FOWL. Taveuni: M 950, 1030, 1100, F 990. Vatulele: M 850, 1010, F650.

Gallirallus philippensis BANDED RAIL. Ono: F 265, unsexed 225, 248, 303.

Pluvialis dominica EASTERN GOLDEN PLOVER. Ono: 126.

Sterna bergii CRESTED TERN. Ono: 315, 345, 350,

Sterna sumatrana BLACK-NAPED TERN. Astrolab Lagoon: 105, 105, 106, 108, 108, 110, 112, 112, 120.

Anous minutus BLACK NODDY. Vatu-i-Ra: 101, 107, 114, 125, 126, 133, 134, 141, 143, 156, 166, 177. Mabulau: 97, 99, 102, 105. Immatures Vatu-i-Ra: 70, 82, 86, 87, 101, 108.

Anous stolidus COMMON NODDY. Vatu-i-Ra: 198, 200, 275, 285.

Columba vitiensis WHITE-THROATED PIGEON. Viti Levu: M 365, 395, 415 (no fat), F 340, 375. Vatulele: M 345, 370, 390, F 320, 340, 360. Taveuni: 305. Yadua: F 268.

Phigys solitarius COLLARED LORY. Viti Levu: M 90.2, F 71.2. Ono: M 92, F 75, 82.

Prosopeia tabuensis RED-BREASTED MUSK PARROT. Ono: 205, 210.

Tyto alba BARN OWL. Viti Levu: M 340, 345. Bulia: F 371. Taveuni: F 360. Ono: F 340.

Aerodramus spodiopygius WHITE-RUMPED SWIFTLET. Viti Levu: 8.2 ± 0.06 ($\bar{x} \pm$ s.e., $n = 102$).

Halcyon chloris COLLARED KINGFISHER. Viti Levu: 45.8, 46.9. Ono: 54, 56, 64.

Hirundo tahitica PACIFIC SWALLOW. Vanua Levu: M 18, F 17, 17.5. Ono: M 17.5, F 17.5. Vatulele: M 17, 18, F 18, 18, 18, 19. Taveuni: M 18.5.

Lalage maculosa POLYNESIAN TRILLER. Viti Levu: 25.5.

Pycnonotus cafer RED-VENTED BULBUL. Viti Levu: 34.6, 36.4, 39.3, 39.5, 42.5.

Turdus poliocephalus ISLAND THRUSH. Viti Levu: 55.4, 57.7, 61.2.

Vitia ruficapilla FIJI WARBLER. Viti Levu: 9.8, 10.7, 13.6, 14.1.

Mayornis lessoni SLATY FLYCATCHER. Ono: 11.0.

Myiagra vanikorensis VANIKORO BROADBILL. Viti Levu: 11.7. Ono: 10.5, 12, 12.5.

Myiagra azureocapilla BLUE-CRESTED BROADBILL. Viti Levu: F 11.1.

Rhipidura spilodera SPOTTED FANTAIL. Viti Levu: 12.1, 12.3, 12.3.

Petroica multicolor SCARLET ROBIN. Viti Levu: F 9.1. M 9.9.

Clytorhynchus vitiensis FIJI SHRIKEBILL. Viti Levu: 24.8, 25.5, 26.8, 27.7. Ono: 20.

Pachycephala pectoralis GOLDEN WHISTLER. Viti Levu: M 30.7, 31. F 31.4. Ono: M 24.5. F 25.5.

Zosterops lateralis GREY-BREASTED WHITE-EYE. Viti Levu: 9.5, 10.3, 10.6, 11.5, 11.7, 12.0. Ono: 11.3.

Foulehaio carunculata WATTLED HONEYEATER. Viti Levu: 25.2, 27.8, 29.4, 34.1, 35.9, 36.1, 36.3, 36.4, 36.8, 38, 38.7, 39.3, 39.5, 40.5, 40.8, 40.8, 41.5, 43.5, 45.4.

Myzomela jugularis ORANGE-BREASTED HONEYEATER. Ono: 9. Viti Levu: 7.1, 7.4, 7.6, 8.2, 8.2, 8.5, 8.5, 8.8.

Erythrura cyanovirens RED-HEADED PARROT FINCH. Viti Levu: M 10.4, 12.5, 12.8, 12.8, 12.9, 13.3, 13.6. F 11.9, 12.1, 12.3. Imm 12.8.

Erythrura kleinschmidti PINK-BILLED PARROT FINCH. Viti Levu: 21.0.

Estrilda amandava STRAWBERRY FINCH. Viti Levu: M 8.3 F 8.6, 8.8.

Padda oryzivora JAVA SPARROW. Viti Levu: 26.6.

Acridotheres tristis INDIAN MYNAH. Viti Levu: 105.3.

Acridotheres fuscus JUNGLE MYNAH. Viti Levu: 74.7, 76.2, 79.2, 81, 84, 86.4, 86.6, 90.6, 91.9, 101.4.

Aplonis tabuensis POLYNESIAN STARLING. Dravuni: 52.

Artamus mentalis FIJI WOODSWALLOW. Vanua Levu: 41. Viti Levu: M 41, 41, 42, 45, F 40, 40, 43, 43, 45. Taveuni: M 40, F 41, 41.5, 42, 46, 48. Nananu-i-Ra: M 33.

It appears that *Halcyon chloris* is larger on Ono than on Viti Levu. It is clear that there is overlap in the weights of *Fregata ariel* and *Fregata minor*. Immature *Anous minutus* can often be detected by their lighter weights, though their shorter bills and smaller white caps are more reliable (Tarburton 1978). Sexual dimorphism appears in the weights of *Columba vitiensis* and *Gallus gallus* with males being the larger. The large range in the weights of *Foulehaio carunculata* may indicate that sexual dimorphism applies there also.

Some of the species included here are also found either in neighbouring island groups or are cosmopolitan, and so comparisons can be made. The two *Puffinus pacificus* were much lighter than five from Tuamotu and Gambier which weighed 320–385 g and averaged 370 g (Lacan & Maugin 1974). The range of *Sula sula* was smaller at both ends than in 10 specimens from Tuamotu which ranged from 780 to 1120 g (Lacan & Maugin 1974). Six *Sula leucogaster* from Touamotu and Gambier had a similar range (1120–1600 g) to this Fijian sample. One of the reef herons from Ono was considerably heavier than a sample of 45 from Tuamotu and Gambier which ranged from 345 to 625 g (Lacan & Mougin 1974). Both species of *Anous* also averaged heavier than those from the Tuamotu and Gambier islands. Fijian *Circus approximans* weights are below the range of that species in New Zealand (Fox 1977). There, males ranged from 525 to 697 g ($\bar{x}=609.4$, $n=21$) and females are heavier with an average of 820.5 g ($n=29$, range 700–1016).

Weight changes in migrants often vary more than 100% and *Pluvialis dominica* is apparently no exception. The bird from Ono was taken on 14 May, only three weeks later than two birds taken in Tahiti which weighed 115 and 215 g (Lacan & Maugin 1974).

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New Information on Birds in Cameroon

by Iain Robertson

Received 27 April 1991

In the course of two visits to Cameroon in March–April 1990 and again in December 1990–January 1991, observations were made which represent extensions to the known range of a number of species, and data were collected which alter the known status of others, and these are presented here. Seven species were recorded apparently for the first time in Cameroon. All co-ordinates are taken from Louette (1981) except those in square brackets which are my own. References to Louette are all from that same source. The sequence and nomenclature of species are based on Brown *et al.* (1982), Urban *et al.* (1986) and Fry *et al.* (1988) for the non-passerines and Hall & Moreau (1970) for the passerines.

PINK-BACKED PELICAN *Pelecanus rufescens*

Two at Waza National Park (11°25′N, 13°34′E) on 24 Mar 1990. There are few dry season records for the northern part of Cameroon.

BLACK STORK *Ciconia nigra*

A single adult in Waza National Park on 20 Dec 1990. Louette gives no records for Cameroon but mentions a record for Nigeria near Lake Chad. Although mapped for northern Cameroon in Brown *et al.* (1982), this appears to be the first record for Cameroon.

ABDIM'S STORK *Ciconia abdimii*

One at Benue National Park (08°05′N, 13°55′E) 24 Mar 1990, two Ngaoundaba (07°04′N, 14°00′E) 27 Mar 1990, 20 near Ndop (06°00′N, 10°25′E) 6 Apr 1990. Up to 50 seen daily in Waza National Park 20–21 Dec 1990. There appear to be few dry season records of this species in the northern part of Cameroon.

YELLOW-BILLED DUCK *Anas undulata*

Two at a lake near Ngaoundéré (07°19′N, 13°35′E) on 25 Dec 1990. The only previous record is of one specimen from the Vina River (07°08′N, 13°50′E) (Monard 1951, cited by Louette). This record is erroneously mapped for northeastern Nigeria in Brown *et al.* (1982). The proximity of the two sites and presence of suitable breeding habitat in the area suggest that this species may be resident in small numbers. There is only one other record for West Africa, from the Mambilla Plateau (07°30′N, 11°35′E), Nigeria (Fry 1986).

PINTAIL *Anas acuta*

Up to 50 seen in Waza National Park 20–21 Dec 1990. Louette states that this species is regular at Lake Chad but gives no records from further south.

SHOVELER *Anas clypeata*

Two observed in Waza National Park 20–21 Dec 1990. Louette gives no records for Cameroon but states that it must occur. This record appears to be the first for Cameroon.

BAT HAWK *Macheirhamphus alcinus*

One at Benue National Park 26 Mar 1990 and at the same locality on 23 Dec 1990. Louette states that the species is recorded mainly from the forest but gives a record from Koum on the Benue Plain.

EGYPTIAN VULTURE *Neophron percnopterus*

Three seen in Waza National Park 24 Mar 1990. Up to four seen daily in Waza National Park 20–21 Dec 1990. Louette states that the species is present in Cameroon south of Lake Chad but that it is probably rare. Both adult and immature birds were seen on both visits to Waza and the species might well be found to breed at Waza Rock.

SHORT-TOED EAGLE *Circaetus gallicus*

Four on 20 Dec and a single on 21 Dec 1990 in Waza National Park. Thiollay (1978) considered this to be the commonest *Circaetus* species in the dry season.

BROWN SNAKE EAGLE *Circaetus cinereus*

An immature bird on 21 Dec 1990 in Waza National Park. Louette states that there are few observations for Cameroon.

SMALLER BANDED SNAKE EAGLE *Circaetus cinereus*

Singles at Benue National Park 26 Mar and 24 Dec 1990. Louette states that there are few detailed records for Cameroon.

PALLID HARRIER *Circus macrourus*

A male at Waza on 23 Mar 1990 and a male near Mora (11°03′N, 14°09′E) on 22 Dec 1990 were the only records. Louette states that this species is common during the dry season in the savanna.

MONTAGU'S HARRIER *Circus pygargus*

The commonest harrier in the north with 10–12 birds seen between Maroua (10°36′N, 14°20′E) and Waza and in Waza National Park 21–22 Mar 1990, and one on the Adamawa Plateau near Ngaoundéré 29 Mar 1990. Up to 15 birds seen daily in Waza National Park 20–21 Dec 1990, and one or two birds seen daily on Benue Plain and Adamawa Plateau 23–28 Dec 1990. Louette states that the species is seldom mentioned from Cameroon and is probably overlooked. Thiollay (1978), cited by Louette, observed many in the Northern region.

MARSH HARRIER *Circus aeruginosus*

One in Waza National Park on 24 Mar 1990, singles at Ngaoundaba on 27–29 Mar 1990 and two near Ngaoundéré on 29 Mar 1990. Three single birds seen in the Bamenda Highlands 17–18 Dec 1990, singles at Waza Park on 21 Dec 1990 and two near Garoua (09°18′N, 13°24′E) on 23 Dec 1990, four at Ngaoundéré 25 December 1990, one or two daily at Ngaoundaba 25–28 Dec 1990 and singles near Buea (04°09′N, 09°14′E) on 1 Jan 1991 and Limbe (04°01′N, 09°12′E) 2 Jan 1991. Louette states that the species has been observed "now and then". From our observations the species is apparently regular over a wide area of Cameroon.

LIZARD BUZZARD *Kaupifalco monogrammicus*

One near Mora on 22 Mar 1990. This record is considerably further north than the northernmost record given by Louette at Koum (08°23′N, 14°31′E), Benue Plain.

WAHLBERG'S EAGLE *Aquila wahlbergi*

One seen in Waza National Park 23 Mar 1990. Two seen at Waza on 20 Dec 1990, a single between Garoua and Benue on 23 Dec 1990, two between Benue and Ngaoundéré on 25 Dec 1990 and a single at Ngaoundaba on 26 Dec 1990. Louette states that this species is not much recorded in Cameroon.

AFRICAN HAWK EAGLE *Hieraaetus spilogaster*

Singles in Waza National Park 20 Dec 1990 and Benue National Park 24 Dec 1990. Louette states that this is a rare or overlooked species in West Africa. Thiollay (1978) only recorded the species twice in northern Cameroon.

BOOTED EAGLE *Hieraateus pennatus*

Singles in Waza Park on 20–21 Dec 1990 and between Waza and Garoua on 22 Dec 1990. This species was first recorded in Cameroon by Thiollay (1978) in the Northern region. There appear to be few documented records.

LESSER KESTREL *Falco naumanni*

A male between Makolo and Mora on 22 Mar 1990. Although mapped as occurring in most of Cameroon in Brown *et al.* (1982), in fact this appears to be the second record for Cameroon, the first being at Ngaoundéré on 7 Sep 1985 (Wilson 1989).

RED-FOOTED FALCON *Falco vespertinus*

A migrating flock of *c.* 300 between Ndop and Kumbo (06°12′N, 10°40′E) on 6 Apr 1990. Louette states that this species is noted in some years, mostly in April.

HOBBY *Falco subbuteo*

A single at Bali Safari Lodge, Bamenda (05°56′N, 10°10′E) on 5 Apr 1990. (*F. cuvieri* also present at this site). Louette gives only one documented record for Cameroon.

PEREGRINE *Falco peregrinus*

A pair of *P.p.minor* on territory, calling and seen to copulate, above the tree-line on the Buea track, Mount Cameroon, 1 Jan 1991. The status of this species does not appear to be well known in Cameroon.

BARBARY FALCON *Falco pelegrinoides*

An adult photographed and observed at very close range in Waza National Park on 20 Dec 1990. Louette gives no records of this species for Cameroon. This observation appears to be the first documented record.

LESSER JACANA *Microparra capensis*

One seen near Ngaoundéré on 25 Dec 1990 (M. Van Beirs and R. Allison, pers. comm). Louette gives only two records for Cameroon, both in the Northern region.

WHITE-FRONTED SAND PLOVER *Charadrius marginatus*

Two on Benue River near Garoua on 23 Dec 1990. Louette mentions one specimen from the Benue Plain.

SPOTTED REDSHANK *Tringa erythropus*

Twenty in Waza National Park on 20 Dec 1990, and one the following day. According to Louette there are few records, all from northern Cameroon.

CHESTNUT-BELLIED SANDGROUSE *Pterocles exustus*

The commonest sandgrouse in Waza National Park; up to 200 seen 23–24 Mar 1990 and up to 150 seen daily 20–22 Dec 1990. Louette gives no records for Cameroon but states that this species occurs near Lake Chad in Nigeria. These records appear to be the first for Cameroon.

TURTLE DOVE *Streptopelia turtur*

Up to 500 present in Waza National Park 23–24 Mar 1990 and up to 100 seen daily 20–22 Dec 1990. The species was probably much more abundant than these numbers suggest. There appear to be few documented records.

ADAMAWA TURTLE DOVE *Streptopelia hypopyrrha*

Six birds at an altitude of 350 m in Benue National Park on 24 Dec 1990. The birds were heard calling from gallery forest and watched drinking at the river's edge. Although recorded by other authors (cited by Louette) from the north of the country and the Adamawa Plateau, Louette himself failed to find this species in Cameroon and despite careful searching we failed to locate the species in March. Urban *et al.* (1986) give December as the laying period in Nigeria, and I suspect that the birds at Benue may also breed at that time but move away from the area by March.

EUROPEAN CUCKOO *Cuculus canorus*

One near Limbe on 30 Dec 1990. Louette states that there are few data for Cameroon.

NIGHTJAR sp. *Caprimulgus* sp.

A small nightjar picked up in a water-logged state on a track at Bafut-Nguemba Forest Reserve (Bamenda) on 9 Apr 1990, and later released, has not yet been identified despite measurements and a series of photographs taken in the hand. It lacked any wing or tail spots, any obvious collar or other conspicuous plumage features. The wing length was 147 mm. This bird may prove to be an undescribed species.

SWALLOW-TAILED BEE-EATER *Merops hirundineus*

A single at Benue National Park on 26 Mar 1990. Louette gives no records for Cameroon but states that it will probably be found there. Fry *et al.* (1988) map this species for northern Cameroon, but this appears to be the first documented record.

PREUSS'S CLIFF SWALLOW *Hirundo preussi*

Up to 12 birds seen Benue National Park 26–27 Mar 1990 and up to 20 there 24–25 Dec 1990, and a single immature at Ndop on 6 Apr 1990. There appear to be few documented records.

TAWNY PIPIT *Anthus campestris*

One 22 km south of Waza on 22 Mar 1990. Louette adds nothing to Good's (1953) statement that the species is "possible in Cameroon". This appears to be the first record.

LONG-BILLED PIPIT *Anthus similis*

One seen at close range in typical rocky habitat at Ngaoundaba 26 Dec 1990. Louette mentions the race *A.s.bannermani* as occurring at Bamenda, Mount Mananguba and near Yaounde.

RED-THROATED PIPIT *Anthus cervinus*

Three near Makolo 22 Mar 1990, 10 in Waza National Park 24 Mar 1990. Louette mentions only two observations and one specimen of this species for Cameroon.

WOODCHAT SHRIKE *Lanius senator*

Three between Makolo and Waza on 22 Mar 1990, up to six daily in Waza National Park 23–24 Mar 1990, one near Maroua 25 Mar 1990. Two or three daily in Waza National Park 20–21 Dec 1990 and one near Makolo 22 Dec 1990. Louette gives few records of this species for Cameroon.

MASKED SHRIKE *Lanius nubicus*

Single birds at Waza National Park on 23 Mar 1990 and between Waza and Maroua on 25 Mar 1990. Two at Waza on 21 Dec 1990. Louette mentions only one specimen and one observation for Cameroon.

BLUE ROCK THRUSH *Monticola solitaria*

One at Waza 20–21 Dec 1990. Louette mentions records by De Greling (1972) for Waza and states that the species may be regular there.

ICTERINE WARBLER *Hippolais icterina*

One at Bali (Bamenda) on 6 Apr 1990. There appear to be only two previous records from Cameroon.

BLACKCAP *Sylvia atricapilla*

One at Ngaoundaba on 28 Mar 1990, and one at Bali (Bamenda) on 17 Dec 1990. Louette gives a record from Yagoua as the only record for Cameroon.

FAN-TAILED WARBLER *Schoenicola platyura*

One at Bali (Bamenda) on 6 Apr 1990. Louette states that this species is known from only a few localities in Cameroon including Bamenda.

BAMENDA APALIS *Apalis bamendae*

Three at Ngaoundaba on Adamawa Plateau on 28 Mar 1990. This locality is *c*. 30 km from Louette's site at Tello.

GOLDEN-BREASTED BUNTING *Emberiza flaviventris*

At least two birds seen 20 km south of Waza on 22 Dec 1990. Louette gives only two previous records for Cameroon at Gagadjé and Garoua.

WATTLED STARLING *Creatophora cinerea*

A party of six birds at Ngaoundaba on 29 Mar 1990, and a maximum of nine birds at the same locality 25–27 Dec 1990. This species is not listed by Louette, and Mackworth-Praed & Grant (1970–73) give only eastern Central African Republic and northeastern and eastern Congo (now Zaire) as the range in West Africa. The records from Ngaoundaba represent a range extension of nearly 2000 km.

Acknowledgements

My visits to Cameroon were made whilst preparing and leading tours for Birdquest Ltd. I wish to thank my companions in the field: N. Borrow and R. Demey who accompanied me in March–April and who also commented on this manuscript, and M. Van Beirs who accompanied me in December January. P. Colston assisted with attempts to identify the nightjar at the British Museum (Natural History) and M. Louette also examined slides of this bird at Koninklijk Museum voor Midden-Afrika, Tervuren.

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New and noteworthy bird records from Guatemala and Honduras

by Steve N. G. Howell & Sophie Webb

Received 30 April 1991

As with many areas of Central America, much remains to be learned about the occurrence and distribution of birds in Guatemala and Honduras. These countries have been visited infrequently by ornithologists in the past 25 years and consequently little recent data exists about their avifauna.

This paper is based on a total of eight weeks of field work in Guatemala during May and June 1988 (Howell & Webb) and February and March 1991 (Howell), and four weeks in Honduras in June 1988 (Howell & Webb) and March 1991 (Howell). The following list represents significant information concerning 40 species and one hybrid, including three species new to the Guatemalan avifauna and two new to Honduras. We also update status information for certain species, the most recent information for many of which is otherwise that given by Monroe (1968) for Honduras, and Land (1970) for Guatemala.

FULVOUS WHISTLING-DUCK *Dendrocygna bicolor*

Honduras: at Lake Yojoa, Dpto. Cortés, 12–15 birds on 28 May, and 70 birds on 30 May 1988. While the species is known to breed at Lake Yojoa, the highest number recorded there in the past was 30 birds (Monroe 1968).

MASKED DUCK *Oxyura dominicensis*

Honduras: this shy and little-known duck has been reported rarely from Honduras (Monroe 1968) and is not known to breed in the country.

At Lake Yojoa, we observed 4♂♂, 3♀♀, on 28 May 1988, and 6♂♂, 4♀♀, on 30 May 1988. Monroe (1968) saw Masked Ducks at Lake Yojoa in Feb 1963 and Apr 1964 and this, together with our 1988 records, suggests the presence there of a resident breeding population.

WHITE-TAILED KITE *Elanus leucurus*

Honduras: one on Isla Utila, Dpto. Islas de la Bahia, on 5 Mar 1991, is the first record of the species from the Bay Islands and probably represents a wandering individual from the mainland.

DOUBLE-TOOTHED KITE *Harpagus bidentatus*

Guatemala: at Cerro San Gil, Dpto. Izabal, at least 13–14 birds (including six pairs) seen, Feb-Mar 1991. **Honduras:** one at Lancetilla, Dpto. Atlantida, 12 Mar 1991. Although this species has been considered rare in northern Central America (Land 1970, Monroe 1968) it is often one of the commoner rain forest raptors and much of its 'rarity' may be attributable to field identification problems. Remarkably, the Lancetilla observation above appears to be only the second Honduran record (cf. Monroe 1968).

GREY HAWK *Buteo nitidus*

Honduras: on the Bay Islands, Dpto. Islas de la Bahia, this species was common and conspicuous on Isla Roatá and at least 4–5 adults, including a territorial pair, were seen on Isla Guanaja. Bond's (1936) sight reports of Grey Hawk from Guanaja were considered doubtful by Monroe (1968) but my observations confirm the species' presence there, apparently as a common breeding resident. Surprisingly, on neither Roatán nor Guanaja did I find the usually conspicuous Roadside Hawk *B. magnirostris*, a species reported from both islands (Bond 1936, Monroe 1968). The dynamics of insular hawk populations on the Honduras Bay Islands might repay study. In this context, we note here that no Common Black Hawks *Buteogallus anthracinus* were seen on Utila where they were reported as "very common" (Monroe 1968), but the species was common on Guanaja ("decidedly uncommon", Monroe 1968).

SHORT-TAILED HAWK *Buteo brachyurus*

Guatemala: Land (1970) mentioned only one old record from "Cobán" (Salvin & Godman 1900: 72), but recent observers have provided records for other areas of the country, mainly the arid interior (Wendelken & Martin 1986) and the Pacific versant (Vannini 1989). In Feb–Mar 1991, in the vicinity of Puerto Santo Tomás, Dpto. Izabal, I saw at least nine Short-tailed Hawks (5 light morph, 4 dark morph), including three pairs, indicating that the species is a common resident there.

BLACK-AND-WHITE HAWK-EAGLE *Spizastur melanoleucus*

Guatemala: singles at Tikal, Dpto. Petén, on 10 and 11 Feb 1991, and at Cerro San Gil on 18 Feb and 2 Mar 1991. **Honduras:** at Lancetilla, the head of a Black-and-white Hawk-eagle was noted hanging from the rear view mirror in a truck belonging to one of the workers. The bird had been killed by a youth "for fun" about a year before in forest 10 km west of Lancetilla, and had since been acquired by the truck driver. This striking species is generally considered rare throughout Central America (Land 1970, Monroe 1968, Ridgely & Gwynne 1989, Stiles & Skutch 1989) and is a candidate for the ICBP Red Data Book for the Americas (N. J. Collar).

HORNED GUAN *Oreophasis derbianus*

Guatemala: in May 1988 one was shot by a local hunter at about 2500 m elevation in the Sierra de Las Minas, about 20 km NW of Rio Hondo, Dpto. Zacapa (J. Bucklin and B. Rimar); the hunter reported the species to be quite common in this remote area. We examined the remains and deposited a photograph of a rectrix and primary at the American Museum of Natural History in New York. The Horned Guan is one of the world's most endangered cracids and is known, at least historically, from only 24 localities in Guatemala and adjacent Chiapas, Mexico (Andrle 1967). Its unexpected presence in the Sierra de las Minas represents a range extension of 110 km NNE from Volcan de Fuego, and 115 km ENE from the Sierra de los Cuchumatanes.

GREY-BREASTED CRAKE *Laterallus exillis*

Guatemala: at least 4–5 birds in marshy cattle pasture at Finca El Higuerito, Dpto. Izabal, on 22–23 Feb 1991 represent the first Guatemalan record of this poorly known species. On the latter date, two birds were tape-recorded and one watched (at ranges down to 1.5 m) feeding and calling for 30 minutes. Grey-breasted Crakes have been recorded from Belize (Russell 1966) and Honduras (Monroe 1968), although known from the latter country only by an 1887 specimen.

RUFOUS-NECKED WOOD-RAIL *Aramides axillaris*

Honduras: one in mangroves at the east end of of Isla Roatán, 7 Mar 1991, is the first record from the island. The species is otherwise known in Honduras only from Isla Guanaja (Bond 1936) and from the Pacific coast (Monroe 1968).

UNIFORM CRAKE *Amaurolimnas concolor*

Honduras: one at Lancetilla, 1 Jun, and two others there, 3 Jun 1988. In 1991, Howell watched one bird, and heard another, at Lancetilla (in a different area from the 1988 sightings) on 11 and 13 Mar. These observations suggest that Uniform Crakes are fairly common at Lancetilla. There are only two previous Honduran records (Monroe 1968).

SNOWY PLOVER *Charadrius alexandrinus*

Guatemala: one at Tikal on 1 Apr 1991 was probably a migrant forced down by the prevailing rain and overcast conditions. The only prior report of this species for Guatemala is from the Pacific coast in Apr 1973 (Dickerman 1975). **Honduras:** we found an alternate-plumage Snowy Plover in flooded fields between El Progreso and San Pedro Sula, Dpto. Cortés, on 31 May 1988. The few previous Honduran records (Brown & Monroe 1974, Monroe 1968) were all between Sep and Feb, and our May record is unusually late for a migrant in Central America.

HUDSONIAN GODWIT *Limosa haemastica*

Guatemala: at the shrimp ponds 10 km east of Tilapa, Dpto. San Marcos, we saw 3♂ and 2♀ Hudsonian Godwits on 17 May 1988. The only previous Guatemalan records are for April, in 1973 and 1974 (Dickerman 1975).

WHITE-RUMPED SANDPIPER *Calidris fuscicollis*

Honduras: three in flooded fields between El Progreso and San Pedro Sula, 31 May 1988. The species is otherwise known from Honduras by two Apr records (Monroe 1968).

BAIRD'S SANDPIPER *Calidris bairdii*

Guatemala: 6–7 at the shrimp ponds 10 km east of Tilapa on 17 May 1988. Previously reported from Guatemala only in Apr 1976 (Dickerman 1977). **Honduras:** one in flooded fields between El Progreso and San Pedro Sula, 31 May 1988, appears to represent the first Honduran record (cf. Monroe 1968, A.O.U. 1983). The bird was studied for 15 minutes and compared directly to White-rumped, Least (*C. minutilla*), and Pectoral (*C. melanotus*) sandpipers.

WILSON'S PHALAROPE *Phalaropus tricolor*

Guatemala: 25 birds at the shrimp ponds 10 km east of Tilapa, 17 May 1988, appear to constitute only the third Guatemalan record (Beavers *et al.* 1991, Salvin & Godman 1903: 395). Lack of observers rather than of birds, however, is largely the reason for the paucity of shorebird records in much of Central America.

FORSTER'S TERN *Sterna forsteri*

Honduras: a basic-plumage bird at Isla Utila, 5 Mar 1991, is the first record for the Bay Islands. Honduras is at the southern limit of this species' Atlantic coast winter range (A.O.U. 1983) and there is only one prior report for the country (Monroe 1968).

CARIBBEAN DOVE *Leptotila jamaicensis*

Honduras: at least four birds calling in dense mangrove-scrub woodland at the east end of Isla Roatán constitute the first record for the island. The species is otherwise known in Honduras only from Barbareta Island and Little Hog Island (Monroe 1968).

RED-LORED PARROT *Amazona autumnalis*

Honduras: only five individuals were seen in two days spent covering most of the island of Roatán; the species was formerly described as "very common" there (Monroe 1968). None was seen on Isla Utila, where Bond (1936) found the species common. Monroe (1968), however, also failed to find Red-lored Parrots on Utila in 1963, and none of the locals spoken with knew of wild parrots on the island. As with the following species, capture of birds for the cage-bird trade is reducing the wild population on Roatán, and may have helped extirpate the species from Utila.

YELLOW-NAPED PARROT *Amazona auropalliata*

Honduras: on Island Roatán only two birds (a pair) were seen in two days, but locals reported the species to be "commoner" on the forested ridges at the easternmost, and least accessible, part of the island. Monroe (1968) considered the species "fairly common to common" on the Bay Islands but capture for the cage-bird trade appears to be seriously affecting the population on Roatán (Yellow-naped Parrots still seemed fairly common on Guanaja in Mar 1991). Most locals spoken with on Roatán captured birds themselves or knew of people who did, and all agreed there were far fewer parrots now than in the past. Careful questioning revealed that only two types of parrots were recognised (Red-lored and Yellow-naped); consequently the only specimen of Yellow-lored Parrot *A. xantholora* from Roatán, and thus from Honduras (Monroe 1968), remains an enigma.

BLACK-AND-WHITE OWL *Ciccaba nigrolineata*

Honduras: Three seen (apparently two males courting a female) at Lancetilla on 8 Jun 1988, and singles heard there on 3 Jun 1988 and 14 Mar 1991. Previously known from Honduras only by an 1891 specimen (Monroe 1968). Greatly increased hours afield at night in the past ten years have shown this species to be fairly common, at least locally, in southeastern Mexico and Guatemala (R. A. Behrstock, Howell), and such will probably prove to be the case in Honduras.

SHORT-TAILED NIGHTHAWK *Lurocalis semitorquatus*

Guatemala: one at dusk over the forest canopy at the Biotopo Chocon Machaca, El Golfete, Dpto. Izabal, on 20 Feb 1991, is the first Guatemalan record, although a Short-tailed Nighthawk was seen along the Mexican side of the Rio Usumacinta in Feb 1989 (Howell 1989). **Honduras:** at least two birds at Lancetilla on 5 Jun 1988, and one on 8 Jun 1988, represent the first occurrence of this species north of northeastern Nicaragua (A.O.U. 1983). Howell is familiar with this distinctive bird from Costa Rica and Panama, and on 5 Jun the birds were calling, ruling out the possibility of one of the related forms (species?) from South America. Previously, Howell (1989) had wondered about the possibility of the Mexican bird being an austral migrant, *L.* (*s?*) *nattereri*, from South America, but the lack of records of that form from southern Central America, the time of year, and the subsequent Guatemala record, support the idea of a resident population in the Atlantic slope rain forests north to eastern Chiapas, Mexico.

BLACK SWIFT *Cypseloides niger*

Honduras: a pair chasing and calling low over the pass at Parque Nacional La Tigra, Distrito Central, 29 May 1988, constitutes only the third Honduran record (cf. Monroe 1968).

BROWN VIOLET-EAR *Colibri delphinae*

Guatemala: at least two singing and 1–2 others seen at 900 m elevation on Cerro San Gil, 24–27 Feb 1991. Previously known in Guatemala only from the vicinity of Cobán, Dpto. Alta Verapaz, and not found in the country since 1928 (Griscom 1932, Salvin & Godman 1892: 283). This species appears to be genuinely uncommon and local in northern Central America.

HONDURAN EMERALD *Amazilia luciae*

Honduras: the rediscovery of this Honduran endemic, in Jun 1988, has been reported elsewhere (Howell & Webb 1989). As so little is known of the species, however, it is worth noting that on 16 Mar 1991 Howell counted 22–28 Honduran Emeralds in 500 × 50 m of thorn forest (part of a larger tract) 4.5 km west of Olanchito, Dpto. Yoro. While the species appears to be common in its restricted range and habitat, in 1991 a newly-paved road had opened up the area and much of the valley floor continued to be converted into pineapple plantations. We express concern that sufficient habitat should be preserved to guarantee the Honduran Emerald's survival.

SPARKLING-TAILED HUMMINGBIRD *Tilmatura dupontii*

Honduras: at Lancetilla, near sea level, 1♀ on 2 Jun, and 1 immature ♂, 1♀, on 6 Jun 1988. Elsewhere in Central America this species has only been found in the highlands (Land 1970, Monroe 1968, Thurber *et al.* 1987), rarely ranging down to 400 m elevation (Monroe 1968). Its presence at Lancetilla coincided with an extensive bloom of *Inga* trees which attracted at least 14 species of hummingbirds, including Brown Violet-Ear and Black-crested Coquette *Lophornis helenae*, two other species usually associated with foothills.

KEEL-BILLED MOTMOT *Electron carinatum*

Guatemala: at 200–700 m elevation on Cerro San Gil, Howell noted and tape-recorded at least 6–8 birds, most calling, 18–28 Feb 1991. On 27 Feb, three were seen perched together, apparently two males courting a female, and the following day one bird was seen near a probable nest burrow. **Honduras:** at Lancetilla, in similar foothill forest to Guatemala, one seen and 3–4 heard, 1–5 Jun 1988, and two seen, plus 5–6 others heard, 12–17 Mar 1991. Traditionally this species has been considered very rare; there is only one other Guatemalan record this century (Smith 1966). In the last few years, however, Keel-billed Motmots have also been found to be locally common in southern Belize (B. & C. Miller, per ICBP 1989).

The common call, a loud, ringing, nasal *ohhng*, is very similar to that of the closely-related Broad-billed Motmot *E. platyrhynchum*, and this may help explain why Keel-billed Motmots have been overlooked where the two species are sympatric in Central America. In addition, like most motmots, the Keel-billed spends much time perched quietly and motionless, and its preference for the mid to upper levels of forest canopy contributes to the problems of observing the species.

LADDER-BACKED WOODPECKER *Picoides scalaris*

Guatemala: a male was carefully observed in pine-oak woodland at 1800 m elevation on the hills south of Magdalena Milpas Altas, Dpto. Sacatepéquez, on 30 Dec 1990 (T. Fenske). This represents the first record for Guatemala. In Honduras, the Ladder-backed Woodpecker is an uncommon and local resident of pine-oak associations in the interior highlands (Monroe 1968) and further work may show this to be its status in Guatemala.

SCALED ANTPITTA *Grallaria guatimalensis*

Guatemala: one seen at Cerro San Gil, 27 Feb 1991, is the first record for Dpto. Izabal.

GREENISH ELAENIA *Myiopagis viridicata*

Honduras: two birds associating closely with one another on Isla Utila, 5 Mar 1991, constitute the first record for the Bay Islands. This inconspicuous species is not known to be migratory and may be an overlooked breeding resident on Utila.

SPECKLED MOURNER *Laniocera rufescens*

Guatemala: one heard at Cerro San Gil, 19 Feb 1991. Previously known from Guatemala by three old trade skins from unknown localities (Salvin & Godman 1891: 130). **Honduras:** at Lancetilla, two seen and another heard, 3 Jun 1988, and singles seen on 12 and 14 Mar 1991. Otherwise known from Honduras by the four specimens reported by Monroe (1968).

HOUSE WREN *Troglodytes aedon*

Honduras: an individual of one of the southern forms (*musculus* group) seen on Isla Utila, 6 Mar 1991. First record for the Bay Islands, presumably a vagrant from the mainland.

TROPICAL MOCKINGBIRD *Mimus gilvus*

Honduras: one on Isla Utila, 5 Mar 1991. First record for the Bay Islands, presumably a vagrant from the mainland.

BREWSTER'S WARBLER *Vermivora pinus* × *V. chrysoptera*

Guatemala: one (apparently a ♂) on Cerro San Gil, 2 Mar 1991, represents the first Guatemalan record of this distinctive hybrid. The only other published Central American occurrences are from Costa Rica (Stiles & Skutch 1989) and Panama (Ridgely & Gwynne 1989).

GOLDEN-CHEEKED WARBLER *Dendroica chrysoparia*

Guatemala: R. A. Barnhill and Howell observed a male in humid evergreen forest at 900 m elevation on Cerro San Gil, 24 Feb 1991. The bird was part of a mixed-species feeding flock that included 2–3 Black-throated Green Warblers *D. virens*, and was studied for ten minutes at ranges down to 15m. First record for Dpto. Izabal.

PRAIRIE WARBLER *Dendroica discolor*

Honduras: 2–3♂♂, 1♀, on Isla Roatán, 7–8 Mar 1991, and 2♂♂, 2♀♀, on Isla Guanaja, 9 Mar 1991, suggest this species is a fairly common winter visitor to the Bay Islands. Monroe (1968) considered the species rare and listed only three prior records for Honduras, the most recent in 1887.

WHITE-VENTED EUPHONIA *Euphonia minuta*

Guatemala: at least 3♂♂, 3♀♀ near Santo Tomás, 16 Mar 1991, 1–2♂♂, 1♀, near Las Escobas, Dpto. Izabal, on 25 Feb 1991, 1♀ on Cerro San Gil, 28 Feb 1991, and 1♂, 1♀, on Cerro San Gil, 2 Mar 1991. Apparently fairly common in the Caribbean lowlands and foothills, supporting the observations of Wendelken & Martin (1989); the only other Guatemalan record is from the last century (Salvin & Godman 1883: 259).

SLATE-COLOURED SEEDEATER *Sporophila schistacea*

Honduras: at least 15 birds at Lancetilla, 1–9 Jun 1988, including several singing males and a female carrying nest material. None, however, noted at Lancetilla during 10–17 Mar 1991. This nomadic species appears to be expanding its range in Central America: it has invaded the Caribbean Slope of Costa Rica since about 1975 (Stiles & Skutch 1989) and was first recorded in Honduras in 1979 (Marcus 1983).

Acknowledgements

We thank Ing. Cesar A. Alvarado B. for his assistance during our studies at Lancetilla Botanical Gardens in Jun 1988. Howell thanks Rose Ann Barnhill of Puerto Barrios for logistical support in Feb–Mar 1991, Jack Bucklin and Tim Fenske for contributing their unpublished records, and Charlie Lownes for drawing his attention to Cerro San Gil. FUNDAECO (in particular Jack Bucklin and Marco Cerezo) and Don Juan Antonio Paz (of Finca El Higuerito) provided logistical support for Howell during a field trip to El Golfete, Dpto. Izabal, in Feb 1991. This is contribution number 494 of the Point Reyes Bird Observatory.

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The identification of forest *Accipiters* in central Africa

by M. Louette

Received 30 April 1991

Prigogine (1980) considers the taxa *tachiro* and *toussenelii*, lumped in one species (African Goshawk) in *Birds of Africa* (Brown *et al.* 1982), as separate species, because in Zaïre, where admittedly they are virtually parapatric, there are no certain intermediates; he does not, however, mention their almost significant size difference (see Table 1, birds from the area of sympatry: Kivu). It is unfortunate that *Birds of Africa* illustrates adult males and immature females only, whereby the fact is masked that in the *tachiro* group, but not in the *toussenelii* group, the adult female is decidedly less reddish underneath than the male. The immatures are quite different as well (Brosset & Erard 1986): *toussenelii* is generally whitish underneath, with some individuals having restricted speckling on the breast; *tachiro* is variable but mostly more heavily speckled. Both have barring on the flanks and, in some individuals, on the thighs.

A smaller species, the Chestnut-flanked Sparrowhawk *Accipiter castanilius*, is correctly illustrated in Brown & Amadon (1968) and Mackworth-Praed & Grant (1970). In *Birds of Africa*, it is wrongly depicted, both the adult (male) and the immature. The adult (sexes are similar in colour) is depicted as lacking the very characteristic grey and very dark brown (not red, which is the colour of the flanks) barring on the underside, present in all 40 adult specimens of both sexes in the Koninklijk Museum voor Midden-Afrika. The adult bird shown is in fact more like the Ethiopian *unduliventer*, the Upper Guinean *macroscelides* and most (but not all; see illustration in Brosset & Erard 1986) Gabon and Cameroon *t. toussenelii* races of African Goshawk *sensu lato*, which are barred rufous and whitish.

The variation in *toussenelii* in Cameroon misled me earlier, when I thought that the two phenotypes present there belonged possibly to different species (Louette 1981). In fact, some specimens from northwestern Zaïre are also slightly barred and there is variation in the colour of the thighs (white, greyish or reddish). In the equatorial forest belt, there is a cline from west to east in the number of individuals with barred underparts. Chapin (1921) found *toussenelii* from eastern Zaïre to be paler and described them as a new race, *canescens*, but in the larger series available now, it appears that the main distinguishing character is size (Table 1). It would be unwise to consider the whole Zaïre population as *canescens*, but the large, almost wholly unbarred Kivu birds may be named so.

The immature *A. castanilius* illustrated in *Birds of Africa* lacks the rusty colour on the thighs, present in all specimens, and resembles instead the immature of *A. toussenelii*, which is otherwise very similar. (In *unduliventer* and *macroscelides* and some of the central African race *sparsimfasciatus* of *A. tachiro*, the immature has rufous thighs as well.)

TABLE 1
Measurements (mm) of adults of central African *Accipiters*

	Wing chord	Claw of inner toe
Accipiter toussenelii		
9 males	192.8, s.d. 2.7	14.27, s.d. 0.72
from Equateur	(187.5–196.5, *n*=8)	(13.1–15.2)
10 females	225.1, s.d. 4.5	18.28, s.d. 0.45
from Equateur	(219–234.5, *n*=9)	(17.2–19.0)
10 females	231.7, s.d. 6.0	19.22, s.d. 0.66
from Kivu	(223–241.5)	(18.0–20.2)
Accipiter tachiro		
10 males	207.5, s.d. 4.5	16.45, s.d. 0.59
from Kivu	(199.5–213)	(15.6–17.5)
10 females	241.1, s.d. 5.3	19.99, s.d. 1.03
from Kivu	(234–251)	(18.4–21.9)
Accipiter castanilius		
10 females	186.0, s.d. 2.6	16.26, s.d. 0.74
from Equateur	(182.5–191)	(15.0–17.2)
8 females	189.1, s.d. 2.8	15.73, s.d. 0.50
from Kivu	(184–192.5, *n*=7)	(15.1–16.4)

My measurements of the tail for *macroscelides* (Louette 1974) are unaccountably long, but the wing measurements are correct, proving that in Upper Guinea the African Goshawk is of generally small size, not much larger than the Chestnut-flanked Sparrowhawk (which occurs in Lower Guinea only). Due to small size and barred underparts in Upper Guinea, the African Goshawk (*macroscelides*) there has been confused with the Chestnut-flanked Sparrowhawk; mistakenly, *Birds of Africa* shows the latter there on its map, though not in its text. Within *A. castanilius*, there is no geographical size difference between birds collected in Equateur and Kivu in Zaïre (Table 1), making the distinction of the latter birds under the name *beniensis* invalid. Neither does the limited material at my disposal from Cameroon suggest that the species is any smaller there. Pending further material, I consider *A. castanilius* as monotypic.

Because in its central African range *A. castanilius* is everywhere sympatric with *A. t. toussenelii* or *A. t. canescens*, apart from the above mentioned *caveat* for adults, there is a problem in distinguishing the immatures of the similar-sized female *castanilius* and male *toussenelii*, both in the hand and in the field. Their wing, tail, culmen and hind claw measurements are rather similar, and the length of the middle toe, though better separated, is not easy to measure on skins. The solution to the problem is given in Brosset's (1973) schematic drawings of the feet: the claw of the inner toe (the largest of the three anterior ones) is longer in *castanilius*, which nevertheless has a shorter wing (Table 1). This corresponds with its different ecology, this species being a rather specialised bird hunter, whereas *toussenelii* also catches mammals and lower vertebrates (Wattel 1972, Brosset 1973, Brosset & Erard 1986). The general size of birds in immature plumage is the same as that of the adult bird (Table 2 illustrates this for one size category), only the tail may be

TABLE 2
Measurements (mm) of male *Accipiter castanilius*

	Wing chord	Claw of inner toe
10 adults	158.7 s.d. 4.1	12.83 s.d. 0.37
from Equateur	(150.5–164)	(12.2–13.5)
10 immatures from	158.6 s.d. 2.5	12.51 s.d. 0.57
Equateur & W. Uele	(154–161.5)	(11.5–13.3)

longer in the immature (see De Vos *et al.* in prep.). The toes and claws rapidly attain their final size in these raptors and this makes it possible to identify the immatures.

A key for immature birds in central Africa

1. wing (generally well) over 197 mm: 2.
1*. wing shorter than 197 mm, but over 174 mm: 4.
1**. wing shorter than 174 mm, thighs with rufous: male *castanilius*.
2. thighs white (possibly barred brown), mostly sparingly speckled underneath: female *toussenelii*.
2*. heavy speckling underneath, generally yellowish underside or rusty thighs: *tachiro* (only in eastern or southern Zaïre): 3.
3. wing shorter than 223 mm: male.
3*. wing longer: female.
4. thighs with rufous, claw of inner toe over 14.9 mm: female *castanilius*.
4*. thighs white (possibly barred brown), breast and belly usually very whitish, claw of inner toe under 15.3 mm: male *toussenelii*.

There is no danger of confusing the similar-sized male of *A. castanilius* with the female of the Red-thighed Sparrowhawk *A. erythropus*, because in the latter species the white rump is present in all ages and sexes. Immature females of the African Goshawk can be separated from immature (males) of the Black Sparrowhawk *A. melanoleucus*: in the latter species, the immature is always rufous (some *tachiro* are also rufous), but streaked underneath, not speckled or barred.

Acknowledgements

I thank P. Herroelen for useful discussion and A. Reygel for help with the measurements of the claws.

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Dark plumaged House Martins *Delichon urbica* in northeastern Siberia

by J.S. Ash

Received 23 September 1991

During 13–15 June 1991 several House Martins *Delichon urbica*, on which the normally white areas of the plumage were more or less obscured with dark colouration, were observed close to the town of Anadyr (64°35′N, 177°20′E) in northeastern Siberia. This area is situated in the tundra zone and is beyond the eastern limit of this martin's breeding distribution as shown in Cramp (1988) and at the absolute eastern limit of it as shown in Turner & Rose (1989).

The birds involved consisted of a group of *c.*10 at any one time feeding round and over a small pool on the boundary of a rather busy airport. Snow and ice had apparently cleared from the area in the previous week or two, but it was not known for how long the birds had been there nor even whether the same individuals were present during the time I was there. Other birds were seen from a bus at Anadyr close to buildings, but they were not examined for dark individuals. Possibly all the birds were still on passage, for 30 mostly rather distant House Martins were seen feeding over a river at Kantschalan, *c.*150 km NNE of Anadyr, on 17 June. A few of these seen well enough were not discoloured.

Description of discoloured birds

No two of the abnormally coloured birds were exactly alike and the degrees of variation are described here:

1. White rump above, and below all dark except for whitish throat and sides of neck.
2. White rump above; all dark below without any indication of even where the edge of the white on the underparts was.
3. As no. 2, but with a trace of white on the throat and belly. This bird was bathing frequently, by splashing into the water from the air, and had some dishevelled remiges and rectrices.

4. As no. 2, but white rump almost obscured. This was the darkest form.
5. Almost normal birds, but slightly diffused dusky on the white underparts which were darker than in *Delichon dasypus*.
6. As no. 5 but darker below, but not as dark as no. 2.

Numbers of dark birds involved

There were at least six discoloured birds at Anadyr, and apparently another elsewhere. Records were as follows. 13 June: one each of nos 1, 2, 3 and 4 in a total of *c*. 10 birds at 09.00 h. At 17.00 h there were two of the abnormal birds (one each of nos 2 and 3). 14 June: one, possibly two, no. 5 birds in a total of 7 or 8. 15 June: there were only a few normal birds in the early morning, but later there were single no. 4 and no. 6 birds. In the evening at about 19.00 h a single no. 6 bird was present in a flock of *c*.30 House Martins at a lake, near what was named locally as Hill 150, at *c*.12 km north of the Anadyr site. This latter bird was also noted independently by Mark Van Beirs. 16 June: on two visits in the morning only two and one normal plumaged birds were seen.

Possible cause of abnormal colouration

At the time of these observations three possible explanations were being considered for the dark birds: (1) that they were melanistic genetic morphs, perhaps restricted to that area of Siberia; (2) that they were local birds contaminated by contact with a pollutant while roosting or perched; (3) that while on passage they had passed through an area of severely polluted atmosphere, such as that in the region of Kuwait.

The possibility of black morphs being involved seems unlikely. I have been unable to trace any other similar observations in House Martins, and the apparent transient nature of the occurrence also tends to rule out this possibility. This species tended to disappear in the middle of midsummer arctic nights at Anadyr, and I failed to find where they went to: possibly they remained high in the air. Neither did I see House Martins sitting on wires or buildings, and I searched without success for any building in the area which was contaminated with a dark substance such as oil or paint. Similarly there was no indication that the pool used by the birds, or any of the other pools or streams in the area, were contaminated by a surface pollutant. Many waterbirds and passerines also used these wet areas, and no indication of any contamination was seen on them.

The last possibility, that contamination had occurred on migration, seems the most likely explanation. A possible source of aerial contamination in the spring of 1991 was in the Kuwait area, some 9000 km to the southwest of Anadyr, where a huge mass of polluted air from burning oil-wells covered a broad area. The drawback to this theory is that the race of House Martins in northeastern Siberia is *D.u.lagopoda*. According to Cramp (1988) this race is believed to overwinter from Assam to Indo-China, so that it is unlikely to occur in Kuwait, unless some part of the *lagopoda* population actually does extend that far west and even join nominate birds overwintering south of the Sahara.

Michael Evans of ICBP led a group which investigated in the spring of 1991 the effects on birds of the war in the Persian Gulf. He informed me (pers. comm., and Evans *et al.* in prep.) that the firing of the Kuwait oil-wells resulted in the contamination of many migrant birds, including hirundines, while they were flying, moving about in vegetation, or feeding and resting in water. Affected birds had plumage discoloured by soot, including the underwings; the plumage was sometimes slightly tacky to the touch, possibly resulting from micro-particles of unburned or incompletely burned oil raised into the atmosphere with the smoke. An explanation for the occurrence of the dark birds in Siberia must remain within the realms of supposition at the present time. Further observations from this area are perhaps unlikely, but data from elsewhere might help to elucidate the matter.

Acknowledgements

I wish to thank Mark Van Beirs for his help in Siberia, and Michael Evans of ICBP for discussion and for kindly permitting me to refer to his draft paper on the effects of the Gulf War on birds.

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A new subspecies of *Cisticola bulliens* from northern Angola

by Alan Tye

Received 10 May 1991

Lynes (1930) originally described the Bubbling Cisticola *Cisticola bulliens*, from a Type collected at Lobito, on the coast of Benguela Province in southern Angola. The species occurs throughout western Angola, north to Cabinda. Lynes studied the long series of specimens in the British Museum (Natural History) (BMNH) and noted that geographical variation was "very slight: not considered racially divisible." However, separation of the BMNH series according to locality shows the existence of two distinguishable populations; the birds from Benguela Province (including the type locality) are lighter in colour than northern birds. Therefore, I propose to name the latter

Cisticola bulliens septentrionalis subsp. nov.

Holotype. BMNH no. 1910.5.6.750, adult male in non-breeding plumage, collected at Ndala Tando (9°13′S, 14°56′E), Angola, on 14 August 1908 by Dr W.J. Ansorge (collector's no. 428).

Diagnosis. The new race differs from the respective plumages of the nominate in the head top (forehead to nape) being a richer, darker brown, less yellow-tinged. This difference is most noticeable in non-breeding (fresh) plumage, but is also evident in worn, breeding dress. In non-breeding dress, the rest of the upperparts are darker, browner, less grey than in the nominate, the centres of the feathers of the back being a darker sepia and the borders a richer brown. This difference virtually disappears in worn, breeding plumage.

Measurements of the type (mm). Wing 68, tail 65, bill 17, tarsus 24.

Measurements of the subspecies. Male: wing ($n = 14$) 61–68 (mean 64.6); tail (breeding, $n = 8$) 53–58 (55.0), (non-breeding, $n = 6$) 57–65 (60.8); bill ($n = 14$) 16–18 (16.8); tarsus ($n = 13$) 24–27 (24.5). Female: wing ($n = 5$) 51–56 (54.2); tail (breeding, $n = 3$) 43–50 (46.0), (non-breeding, $n = 2$) 52, 57; bill ($n = 5$) 14–15 (14.8); tarsus ($n = 5$) 21–22 (21.6).

Distribution. C. b. septentrionalis is known to occur in northern Angola, from Cabinda through intervening coastal Zaïre, south to about Gabela (11°S). It does not appear to intergrade with the nominate race south of Gabela.

Specimens examined. C. b. septentrionalis: paratypes include the following specimens in the BMNH. Non-breeding males: Ndala Tando 1910.5.6.751, 753, 755–759, 810–812 (collected July–December 1908); Dondo, Angola 1910.5.6.760-762 (July 1908); R. Cuvo (10°47′S, 14°20′E) 1957.35.395 (19 September 1957); Lândana, Cabinda 95.5.1.1180 (August 1883). Breeding males: lower R. Cuanza valley (9–10°S, 14–15°E) 1931.12.21.509-514 (March 1931); Quiculungo (Cuanza Norte Province, Angola) 1940.12.2.60 (March 1939); Ambrizete (north Angola) 1931.12.21.515 (17 April 1931); Lândana 89.3.27.45, 95.5.1.1178 (February and March 1883). Non-breeding females: Ndala Tando 1910.5.6.800, 801 (13 August and 6 November 1908); Dondo 1910.5.6.802 (12 July 1908). Breeding females: lower R. Cuanza valley (near Dondo) 1931.12.21.510 (12 March 1931); Ambrizete 1931.12.21.516 (7 April 1931); 11 miles west of Matadi, left bank of R. Congo 1931.12.21.517 (11 April 1931). Nine unsexed or doubtfully-sexed adult skins and four probable immatures in the BMNH were also examined. *C. b. bulliens*: five non-breeding males, six breeding males, five non-breeding females and six breeding females, all from Benguela Province, collected in July and August (non-breeding birds) and January–March (breeding), all in the BMNH.

Acknowledgements

I thank the staff of the British Museum at Tring for access to specimens in their care, and Hilary Tye who confirmed that the differences between the two races were real, by correctly placing several anonymous skins.

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The status of *Corythaix reichenowi* Fischer, 1880 and *Corythaix cabanisi* Reichenow, 1883

by *P. A. Clancey*

Received 7 June 1991

Both forms of Afrotropical turacos of the genus *Tauraco* Kluk, 1779, *Corythaix reichenowi* Fischer, 1880 and *Corythaix cabanisi* Reichenow, 1883, were seemingly described on single specimens from the same type-locality in eastern Tanzania, their status still being unresolved. Peters (1940), in recognising *C. cabanisi* as a valid subspecies of *Tauraco livingstonii* (Gray), gives its type-locality as the Nguru Mts of eastern Tanzania (6°09′S, 37°20′E), and its range as extending from Bagamoyo on the coast and Ugogo to the Uzungwe Mts (8°20′S, 36°00′E). He then deals with a second taxon described three years earlier from the Nguru range—*Corythaix reichenowi*—commenting that its status is still unsettled. While *T. l. cabanisi* has been recognised by many students of the Musophagidae, the equivocal name *reichenowi* has only really figured in recent times in the southern African literature, where it has been used for the populations of *T. livingstonii* distributed from the Tanzanian coast south along the littoral of Mozambique to northeastern Zululand (to the St Lucia estuary); see Clancey (1952, 1980; 1989, especially Fig. 2). As pointed out in the last publication, the status of the names *reichenowi* and *cabanisi* warrants critical reconsideration, as both are currently understood to have the same type-locality, and, as a result, the colour characters attributed to the types may simply represent individual rather than geographical variation.

With the recent reunification of Germany it was possible to arrange to have the types of both *reichenowi* and *cabanisi*, housed in the collection of the Institut für Spezielle Zoologie und Zoologisches Museum, Berlin, sent to the Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn, where they were critically compared on my behalf by Dr H. E. Wolters of the said institute, with recent material of *T. livingstonii* populations resident in eastern Zimbabwe, lowland Mozambique and the Nguru Mts of Tanzania sent over for the purpose from the Durban Natural Science Museum.

Commenting on the assembled material, Dr Wolters attests that the female type of *cabanisi* is an indifferently prepared skin with a wing of 165 mm, of a bird which had been in captivity for ten months prior to its death. The original data label records that it came from Bagamoyo (6°20′S, 38°30′E), to which has been added in a second hand (that of Reichenow?) a comment to the effect that the given locality is doubtful. It is important to note, nevertheless, that the Ngurus are not alluded to on the original label, the adoption of these mountains as the type-locality by later authors being the result of the secondary querying of the type's provenance.

Two specimens from southern Mozambique (from Chimonzo, to the immediate south of the Limpopo estuary, and Massinga, in the

Inhambane district), both part of a good series currently referred to the subspecies *T.l. reichenowi* (see Clancey 1980), are closely similar to the type of *cabanisi*, Wolters noting that they are perhaps a little more bluish on the backs and wing-coverts, which slight difference in nuance is probably a result of colour deterioration through time, the type now being well over a hundred years old, and the bird's months of captivity prior to death. The locality of Bagamoyo as given on the label of the type is seen as in all probability correct, in which case the subspecies of *T. livingstonii* of the eastern African coastlands from south of 6° S to northeastern Zululand will bear the trinomen *T. l. cabanisi*.

On comparison, the type-specimen of Fischer's *C. reichenowi* was determined as being attributable to a form very different to *T. l. cabanisi*. The specimen is a neat skin, unsexed, and taken in the Nguru Mts by the describer Dr G. A. Fischer (1848–1886). It was presumably prepared by the collector. Compared with the type of *cabanisi*, it was found to "look very different", the back and wing-coverts deep blue, with a green sheen only present over the mantle. This finding agrees in part with Shelley's (1891) rendition of Fischer's original description of *reichenowi* in which the shorter, less frontally peaked and more evenly graduated style of the crest—recalling that found in the southern African *T. corythaix* (Wagler)—is also emphasized. By all accounts, samples of *reichenowi* from single blocks of montane evergreen forest are subject to a measure of individual variation over the upper-parts and wings. Friedmann (in Friedmann & Loveridge 1937) comments on a series of twelve adults of what they consider to be *T. l. cabanisi* from the Uluguru Mts to the effect that some were typical of *cabanisi* (greenish), others bluish (*reichenowi*) and yet others intermediate (*hybridus*; = *Turacus hybridus* Reichenow, 1898). Personal examination of eastern Tanzanian montane evergreen forest material confirms that such populations are discrete form nominate *T. livingstonii* on the basis of a shorter and more evenly graduated crest, rather more lustrous upper-parts, with the metallic green largely confined to the mid-dorsal plane, and the lateral back (including the scapulars), wing-coverts and tertials blue or dark greenish blue. As in all plumages with refractive colouration, there is a measure of individual variation, some of which may also result from both solar action and wear. On the basis of the re-examination of the type-specimen, which represents the blue extreme of the eastern Tanzanian montane populations, and nomenclatural priority, the said populations will now become *T. l. reichenowi*.

Britton (1980) subsumes under the nominate race of *T. livingstonii* both *T. l. reichenowi* and *T. l. cabanisi*. In Clancey (1974) I demonstrated that in *T. l. livingstonii* the crest-length declines clinally from longest in regions to the south of the Zambesi to shorter north of it. This decline in the length of the crest-feathers terminates in one of the characters of *T. l. reichenowi*, which further differs from nominate *livingstonii* in the generally bluer lateral dorsal and adjacent wing-surfaces. The latter subspecies is in effect restricted to the eastern aspects of Zimbabwe and adjacent montane Mozambique, north to southern Malawi to the east of the Rift and the contiguous highlands of northern Mozambique. *T. l. livingstonii* and *T. l. cabanisi* of the Mozambique littoral intergrade at points along the range interface, as occurs further north in eastern Africa where the ranges of *cabanisi* of the littoral and of the interior *reichenowi* are juxtaposed. This confirms their conspecificity. In sharp contrast is the state of parapatry existing where the western elements of *livingstonii* meet the eastern populations of *schalowi*, which Dowsett-Lemaire & Dowsett (1988) would have us, on the basis of discrete vocalization, treat as a further species, *Tauraco schalowi* (Reichenow), described from Angola. An opposing view is that of van Tuinen & Valentine (1986), who, employing chromosome banding analysis procedures, maintain that *schalowi* is part of the southern *T. corythaix*. Be that as it may, *T. livingstonii* and *T. schalowi* meet in a state of secondary contact and are in effect paraspecies with little or no hybridization, whereas *schalowi* and *corythaix* subspp. are spatially remote, separated from one another by unsuitable habitats and in the east by intrusive populations of nominate *T. livingstonii*. Taxonomically it is more satisfactory to view *schalowi* as a species and not part of either *livingstonii* or *corythaix*. As all three species here dealt with—*T. corythaix, T. livingstonii* and *T. schalowi*—are seen as the result of a comparatively recent radiation, it may be noted that there is a confusing measure of character repetition between them, as instanced by the *T. l. cabanisi*-type of dorsal and wing-colouration present in the *T. corythaix* race *T. c. phoebus* (Neumann), 1907, of Transvaal highland forests (see Clancey 1975), and the approach to a *corythaix*-style of crest to be found in *T. l. reichenowi* (see above). Species limits in the turacos here dealt with are difficult to resolve on straightforward morphological criteria and can only be satisfactorily arrived at by a close study of the reactions of the populations of the forms concerned at their range interfaces.

The characters and ranges of the three forms of *T. livingstonii* (of the estimated four) herein dealt with, all of which are recognised by Wolters (1976), will now stand as given below. The colours employed are those of Ridgway (1912).

Tauraco livingstonii livingstonii (Gray), 1864: Manganja Highlands, southern Malawi. Crest-length 65 to *c.* 75 mm. Mantle, scapulars and adjacent wings dark Peacock Green, the feathers broadly fringed emerald, imparting a scaled effect.

Range: Montane evergreen forests of the frontier highlands of Zimbabwe and southern Mozambique, and north of the Zambezi in the highlands of Malawi east of the Rift, and of adjacent northern Mozambique.

Tauraco livingstonii cabanisi (Reichenow), 1883: Bagamoyo, coastal Tanzania. Crest-length >65 mm. Scapulars and adjacent wing-surfaces about dull bluish Invisible Green, tinged violet, the scaled effect reduced.

Range: Littoral forests of northeastern Zululand (from about the St Lucia estuary) and of Mozambique, north to the coastlands of Tanzania to the south of *c.* 6°S. Intergrades in the south of its range with *T. l. livingstonii* to the west, and north of the Rovuma R. in the west with *T. l. reichenowi*.

Tauraco livingstonii reichenowi (Fischer), 1880: Nguru Mts, eastern Tanzania. Crest-length <65 mm. Scapulars and adjacent wings more lustrous and darker bluish than *cabanisi* (about Indulin Blue, with some green admixture).

Range: Montane evergreen forests of the Nguru and Uluguru Ranges, southeast to the Dabaga Highlands and Njombe and other highlands clustered round the north and northeast of L. Malawi in Tanzania.

Britton (1980) gives the established range of *T. l. chalcolophus* (Neumann), 1895: Mt Gurui, Irangi, Tanzania, as highlands of northern Tanzania at Hanang, Ketumbeine, Ufiome, Ngorongoro and Mbulu. He does not allude to *T. l. loitanus* (Neumann), 1908: Loita Hills, southwestern Kenya, which may in fact be an isolate of *T. schalowi*, which otherwise ranges east to just east of L. Tanganyika. The last named has a crest-length to 112 mm.

In the south of the range *T. livingstonii* occurs in parapatric association with the austral *T. corythaix* (in both the nominate race and *T. c. phoebus*) and, comparably so, further north in the Malawi Rift region with *T. schalowi*.

Acknowledgements

I am singularly indebted to the late Dr H. E. Wolters of the Museum Alexander Koenig, Bonn, for carefully comparing the types of two contentious turaco forms described last century from eastern Tanzania with selected material from the collection of the Durban Natural Science Museum. Thanks are also due to Dr G. Mauersberger of the Zoologisches Museum, Berlin, for kindly releasing the types of both *Corythaix reichenowi* and *C. cabanisi* for this investigation.

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Further notes on migrants in the Cape Verde Islands

by C. J. Hazevoet

Received 24 June 1991

In a previous note (Hazevoet 1990), data were given for several new and rare migrants observed in the Cape Verde Islands in 1986–90. During another 3 months stay in the country (27 January–28 April 1991), in connection with the National Parks and Protected Areas Program, additional observations were made on some of the species listed previously, while another new species and a new subspecies were recorded. Many of the observations during the current period seem to confirm the supposition made earlier, that with continuing ornithological research many of the species that were considered vagrants in the past will be shown to be regular (passage) visitors, be it in limited numbers. As in 1986–90, most of the migrant passerines were found again in the three eastern islands (Sal, Boavista, Maio). It appears now that they really do occur more often there and that their appearance is in consequence of the position nearer to the African mainland and not only related to the fact that these flat islands offer better opportunities for encountering small birds. However, it may be noteworthy that the few records of migrant passerines elsewhere in the archipelago were also made on flat islands such as São Vicente and Raso. Apart from hirundines, there are no records at all of migrant passerines from Santiago, Fogo, Brava and Santo Antão, all of which combine a mountainous environment with a more westerly position.

Again, through the courtesy of several other observers some of their unpublished records could be included here. Unless stated otherwise, all observations are by the author. More data on migrants were recently published by den Hartog (1990). The distribution of migrant waders in the Cape Verde Is. is discussed in another paper (Hazevoet 1991), including the third record of Knot *Calidris canutus*, inadvertently omitted by Hazevoet (1990).

SPOONBILL *Platalea leucorodia*

In April 1991, Spoonbills were observed again at the same two lagoons where they were regularly seen during 1988 90 (Hazevoet 1990). On 9 April, 2 juveniles were observed at Pedra Badejo lagoon, Santiago, and on 24–26 April, one juvenile was present at Rabil lagoon, Boavista. There are now 14 records (10 since 1986) and the species can be considered a regular, probably annual, visitor in small numbers, almost exclusively at the two sites mentioned.

AVOCET *Recurvirostra avosetta*

One was present at Rabil lagoon, Boavista, on 18 February 1991, and again one there (possibly the same bird) on 26 April. Only 2 previous records: Alexander (1898b) observed 2 in saltpans near Porto Inglês (Vila do Maio), Maio, on 20 November 1897, and another 2 were seen at the Pedra Lume saltpans, Sal, on 7–8 February 1987 (D. de Bruyn).

BAR-TAILED GODWIT *Limosa lapponica*

Hazevoet (1990) gave 11 records since 1969,. when it was first collected. Further records in 1991 (4 at Rabil lagoon, Boavista, 18 February, and 2 there, 24–26 April) confirm that the species is now a regular (annual) winter visitor in small numbers and extend the known period of occurrence to October-April.

WHIMBREL *Numenius phaeopus*

Nominate *N. p. phaeopus* is a widespread winter visitor along the coast throughout the islands. On 15 February 1991, I observed a Whimbrel with an all-brown rump at Preguiça, São Nicolau, and identified it as *N. p. hudsonicus*. This is the first record of the Nearctic subspecies and in fact only the second Nearctic (sub)species recorded in the Cape Verde Is., American Golden Plover *Pluvialis dominica* being recorded three times (Bannerman & Bannerman 1968, Frade 1976). It is possible, of course, that some of the other migrants or vagrants in the islands (e.g. Grey Phalarope *Phalaropus fulicarius* and Sabine's Gull *Larus sabini*) originate from North American breeding grounds, but since there are as yet no ringing recoveries this remains speculative. In West Africa, *N. p. hudsonicus* has been recorded once in Sierra Leone (Urban *et al.* 1986).

CURLEW *Numenius arquata*

One was seen along the shore southeast of Porto Inglês (Vila do Maio), Maio, on 2 April 1991, in the company of a Whimbrel *N. phaeopus*. This is the first acceptable record. Previously, Alexander (1898a) reported that he heard a pair calling on Boavista on 13 May 1897, without giving further details. Bocage (1898) listed it without evidence for Santiago, Sal, Boavista and Maio.

SPOTTED REDSHANK *Tringa erythropus*

On 18 February 1991, one was present at Rabil lagoon, Boavista, together with many other wader species. The only previous record was of one at Pedra Badejo lagoon, Santiago, on 9 November 1988 (Hazevoet 1990).

COMMON TERN *Sterna hirundo*

On 18 February 1991, 2 were observed at Rabil lagoon, Boavista, and one was present there on 26 April. Previously, there were only two records of birds ringed in Finland and Sweden and recovered on Santo Antão in June 1935 and on Sal in April 1979 respectively (Rydzewski 1958; B.-O. Stolt, *in litt.*). Other recent records are of 1–2 birds at Calheta, Maio, on 5 January 1987 (D. de Bruyn), one immature near Curral Velho, Boavista, on 30 December 1988 (K. Morgan), and one near Praia, Santiago, on 21 May 1989 R. L. Miller). Furthermore, there is a ringing recovery of a Swedish bird of which further details are lacking at present (Tauraco AFRING Data Bank). There are no breeding terns in the Cape Verde Islands, but migrants are apparently less rare than formerly supposed. Recent observations show that at least 4 species are probably regular passage visitors in small numbers. Data on Sandwich Tern *S. sandvicensis* and Little Tern *S. albifrons* were given by Hazevoet (1990), while the latter species was observed again in 1991 (see below). Furthermore, Lambert (1980) observed Arctic Terns *S. paradisaea* in flocks of up to 65 birds at sea among the islands, and Icelandic fishery researchers informed me that they saw *c.* 20 Arctic Terns at sea between Maio and Santiago in April 1989. Moreover, there are 3 records of unidentified terns (Murphy 1924, P. W. G. Chilman *in* Bannerman & Bannerman 1968, C. J. Camphuysen), and 'Comic Terns' *S. hirundo/paradisaea* have been reported at sea just east, west and south of the islands (Harris & Hansen 1974, A. R. Louch).

LITTLE TERN *Sterna albifrons*

On 24–26 April 1991, one was foraging along the shore south of Sal Rei, Boavista, the same location where one was seen in March 1990 (Hazevoet 1990). There are now 3 records from Boavista and Maio during 1988–91 and it appears that the species is a regular passage migrant in small numbers in the eastern islands.

TREE PIPIT *Anthus trivialis*

On 4 April 1991, 4 were observed in the littoral zone southeast of Porto Inglês (Vila do Maio), Maio. They were foraging in the extensive *Zygophyllum* vegetation present there. Only one previous record: one near Curral Velho, Boavista, on 20 September 1988 (Hazevoet 1990).

WHITE WAGTAIL *Motacilla alba*

On 27 January 1991, 2 were foraging near a sewage outlet at Espargo, Sal, and on 28 February 1991, one was seen at the sewage farm south of Mindelo, São Vicente. The only record previously was of one collected by the Blossom expedition on São Vicente, 30 January 1924 (Bannerman & Bannerman 1968).

WHEATEAR *Oenanthe oenanthe*

Observed twice in 1991: 2 east of Rabil, Boavista, on 19 February, and one at Terra Boa, Sal, on 27 April. There are now 9 records (November–April), 7 since 1985, confirming the earlier supposition (Hazevoet 1990) that the species is a regular winter visitor in small numbers.

SPOTTED FLYCATCHER *Muscicapa striata*

One was observed in *Acacia* bushes at Terra Boa, Sal, on 27 April 1991. Only one previous record: one near Porto Ferreira, Boavista, on 21 September 1988 (Hazevoet 1990).

Acknowledgements

I am grateful to Deirdre de Bruyn, Kees Camphuysen, Andy Louch, Lynn Miller and Kevin Morgan for providing me with their unpublished records. Bengt-Olov Stolt (Bird Ringing Centre, Swedish Museum of Natural History) kindly supplied details of a ringing recovery. In 1991, my work in the Cape Verde Islands was supported by the International Council for Bird Preservation (Netherlands section), the Dierenrampenfonds, the J. C. van der Hucht Fonds and the Martina de Beukelaar Stichting. In Cape Verde, working facilities were provided by the Instituto National de Investigação Agrária and the Ministry of Rural Development and Fisheries.

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The *Bulletin* is despatched from the printers on publication and is sent by Surface Saver Postal Services to all European destinations outside the U.K. and by Air Saver Postal Services to destinations outside Europe. Those whose subscriptions have not been received by the beginning of a month of publication will have their copies despatched by surface mail, after their current subscription has been paid.

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Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

QL
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ISSN 0007–1595

Bulletin of the

British Ornithologists' Club

Edited by
Dr D. W. SNOW

Volume 112 No. 2

June 1992

FORTHCOMING MEETINGS

Tuesday, 14 July 1992. Dr Storrs L. Olson, Curator in the Division of Birds at the Smithsonian Institution, Washington, since 1975, has an international reputation for his research in avian palaeontology. He will speak on **"Prehistoric Birdlife of the Hawaiian Islands".** This meeting has been specially arranged to take advantage of a visit to Europe by Dr Olson. We are very fortunate to have the opportunity of hearing him.

Those wishing to attend are asked to notify the Hon. Secretary by Tuesday, 1 July 1992.*

Tuesday, 28 July 1992. Dr Angela Turner, "The Hirundines: a most entertaining tribe of Birds". Dr Turner worked on the hirundines for her doctorate and is the author of the text of *A Handbook to the Swallows and Martins of the World.* She is presently Assistant Editor of *Animal Behaviour.*

*Those wishing to attend are asked to notify the Hon. Secretary by Tuesday, 14 July 1992.**

Tuesday, 15 September 1992. Dr W. and Dr U. Thiede, "Japan—Britain of the East?". Dr Walter Thiede, who gained his doctorate with a thesis on the distribution and taxonomy of the Redshank, has been a manager in the pharmaceutical industry for 26 years, 5 of which were spent in Japan. He is co-editor of *Ornithologische Mitteilungen.* Dr Ulrike Thiede is a zoologist and japanologist. She is a lecturer on Japanese affairs at the University of Düsseldorf. Both Dr Walter and Dr Ulrike Thiede have published books and papers on their subjects.

Those wishing to attend are asked to notify the Hon. Secretary by Tuesday, 1 September 1992.*

The celebration of the Centenary of the Club will be held in London after mid-October. Arrangements for the special dinner to mark the occasion cannot be completed until July and will be published in the September issue of the *Bulletin*. Members who are likely to attend the dinner must complete the slip enclosed in this issue. Details will be sent to them as soon as they are available.

Tuesday, 9 November 1992. Dr A. G. Gosler will speak on **"Bill adaptations in the Great Tit—or a mandible for all seasons".** Dr Gosler's address is based on work he began as a David Lack student in 1982. Since 1987 he has been a University Research Officer at the E.G.I. working mainly on the long-term population study of the Great Tit.

Meetings are held in the Senior Common Room, Sherfield Building, Imperial College, London SW7 at 6.15 pm. for 7 pm. A plan showing Imperial College will be sent to members on request.

*Late acceptances and cancellations can usually be taken up to the Thursday morning preceding a meeting, although members are asked to accept by 14 days beforehand as arrangements for meetings have to be confirmed with Imperial College well in advance.

If you accept and subsequently find you are unable to attend please notify the Hon. Secretary, 1 Uppingham Road, Oakham, Rutland LE15 6JB (tel. 0572 722788) as soon as possible as the booking can often be offered to another member.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 112 No. 2 Published: 24 June 1992

The eight hundred and fifteenth meeting of the Club took place in the Ante-room, Sherfield Building, Imperial College, London on Tuesday, 21 January 1992. 33 members and 18 guests attended.

Members attending were: R. E. F. PEAL (*Chairman*), Mrs A. M. MOORE (*Hon. Secretary & speaker*), M. A. ADCOCK, A. H. BAYLIS, P. J. BELMAN, N. J. BUCKNELL, Mrs D. BRADLEY, R. C. BOUGHTON, P. J. BULL, D. R. CALDER, Dr R. CHEKE, I. D. COLLINS, P. J. CONDER, J. H. ELGOOD, S. J. FARNSWORTH, G. D. FIELD, Revd T. W. GLADWIN, D. GRIFFIN, C. A. R HELM, Mrs M. MULLER, J. G. PARKER, N. J. REDMAN, V. SAWLE, P. J. SELLAR, R. E. SHARLAND, Dr N. SKINNER, N. H. F. STONE, M. P. WALTERS, M. WOODCOCK.

Guests attending were: Mrs B. ADCOCK, Miss J. ALEXANDER, Mrs G. BONHAM, Mrs J. BULL, Mrs J. CALDER, Mrs J. CELES, Dr J. A. COLES, D. COUNSELL, Mrs F. FARNSWORTH, Mrs J. GLADWIN, Mrs S. GRIFFIN, J. HARDING, Mrs G. HARDING, A. P. LEVENTIS, P. J. MOORE, B. O'BRIEN, Mrs E. PEAL, Mrs B. WOODCOCK.

After supper Mrs Amberley Moore spoke on 'Ornithology in the search for the course of the Niger'. By the end of the 17th century the coast of Guinea was well known to Europe, and there is evidence of a significant trade in wild birds between Africa and Europe at that time. Linnaeus described over 50 species of birds from the region in the 10th edition of the *Systema Naturae*, 1758. But the interior of West Africa and the river Niger remained known in Europe only from the writings of geographers of the ancient world and of Arabic travellers of the Middle Ages. At the beginning of the 19th century several expeditions were mounted to chart the course of the river and to open up the interior of the continent. Two expeditions, in particular, had the secondary objective of scientific exploration of West Africa—the Bornu Mission of Clapperton and Denham in 1821 and the Niger River Expedition of 1841. Both expeditions were successful in that considerable scientific collections were made. From over 100 zoological specimens collected by the Bornu Mission, there were 24 species of birds, of which 3 were new species. The collection of the Niger Expedition included 46 ornithological specimens. From these, 35 new species were described and although some have since become lost in synonomy 22 valid species and 12 races remain. The names of some of the members of what were dangerous and difficult expeditions are commemorated in the names given to some of these new discoveries.

The eight hundred and sixteenth meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London on Tuesday, 18 February 1992. The attendance was 23 members and 12 guests and a guest of the Club, Dr D. Harper.

Members attending were: R. E. F. PEAL (*Chairman*), M. A. ADCOCK, Miss H. BAKER, P. J. BELMAN, P. J. BULL, Dr J. BYNON, Cdr M. B. CASEMENT RN, Dr R. A. CHEKE, Dr R. A. F. COX, A. GIBBS, D. GRIFFIN, C. A. R. HELM, Dr J. F. MONK, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, P. J. OLIVER, V. J. SAWLE, Dr R. SELF, P. J. SELLAR, P. WILLIAM SMITH, Dr D. W. SNOW, N. H. F. STONE.

Guests attending were: Mrs B. ADCOCK, Professor T. BYNON, Mrs M. BULL, Mrs B. GIBBS, Revd P. van de KASTEELE, Mrs P. van de KASTEELE, P. J. MOORE, Mrs M. OLIVER, Ms K. HOFF, Mrs S. WILLIAM SMITH, Mrs B. SNOW.

After supper Dr David Harper gave the address. His subject was 'Why is Robin behaviour so variable?' An abstract of his talk will be published in a later issue of the Bulletin.

The eight hundred and seventeenth meeting of the Club took place in the Rector's House, Imperial College, London on Tuesday, 7 April 1992. 24 members and 10 guests attended.

Members attending were: R. E. F. PEAL (*Chairman*), Dr C. G. VIOLANI (*Speaker*), M. A. ADCOCK, Miss H. BAKER, P. J. BELMAN, Mrs D. BRADLEY, D. R. CALDER, Cdr. M. B. CASEMENT RN, P. J. CONDER, S. J. FARNSWORTH, Miss C. T. FISHER, D. GRIFFIN, Revd T. W. GLADWIN, C. A. R. HELM, Ms R-M. JONES, Dr A. G. KNOX, Revd G. K. MCCULLOCH, Dr J. F. MONK, D. J. MONTIER, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, J. G. PARKER, M. P. WALTERS.

Guests attending were: Mrs B. ADCOCK, Mrs J. CALDER, Mrs F. FARNSWORTH, Mrs J. GLADWIN, Mrs I. MCCULLOCH, Mrs N. LIDDELL, Mrs D. MONK, Mrs M. MONTIER, P. J. MOORE, P. MULLER.

Members were pleased to welcome Dr Carlo Violani to speak again to the Club. He spoke on the 18th century naturalist Giovanni Antonio Scopoli and his influence on Italian ornithology. A summary of his talk will be published in a later issue of the Bulletin.

The birds of La Plata Island, Ecuador

by Fernando I. Ortiz-Crespo & Philip Agnew

Received 11 June 1991

This paper has been written as a result of collaboration between the University of Bristol Isla de Plata Expedition 1990 and Dr F. Ortiz-Crespo. The expedition was formed to follow up recommendations made by Duffy & Hurtado (1984) in a paper for the International Council for Bird Preservation. These included an inventory of the island's flora and fauna. A total of six weeks (20 July–1 September 1990) was spent on the island by six students from the University of Bristol and two students from the Pontificia Universidad Católica, Quito. Dr F. Ortiz-Crespo visited the island on 28 July 1990 with Ben Hasse, Mariuxi Prieto and 10 others.

Isla de la Plata (0°16′S, 81°06′W) is an isolated island 27 km off the Pacific coast of Manabi Province, Ecuador. It has a volcanic rock base, similar to basalt. It measures 5.5 by 2 km, and has an area of 14 km^2; the highest point is 167 m. The climate has two distinct seasons: from December to April/May there are high temperatures and heavy rains; the rest of the year is dry and cooler. The vegetation is permanent arid scrub, mainly xerophytic. The island is administered as part of the Machalilla National Park, based at Puerto Lopez. The only structures are a few fishermen's shacks, a derelict hotel building on the north beach and an automatic lighthouse on the upper northwest flats.

History of ornithological exploration

The earliest collecting was by William B. Richardson, on assignment for the American Museum of Natural History. Chapman (1926:711) quotes Richardson, as follows: "Its slopes rise precipitously about 500 feet, forming a plateau five miles long by four at the widest part. This arid plain, cut by two ravines, is covered with thorny brush, wild cotton, cactus and a few stunted trees. In March (25th) it was parched and brown and it had not rained for months. I found 15 species of land-birds, all breeding. Birds are scarce, except the Mockingbirds, Red-breasted Starling, Ground Dove and two Flycatchers."

Robert C. Murphy (1936:311) records his visit there on 17 February 1925, in the middle of the rainy season. At that time the island was inhabited by a lighthouse keeper, his family, a few heads of cattle and donkeys, and "hundreds" of goats. During his visit, "La Plata rang with bird songs, the caroling of the 'chirote' or Mockingbird rising above those of all the others". Murphy seems to have confused the Peruvian Meadowlark (chirote) with the Mockingbird (cucube, tilingo). He notes further, "During our wanderings we noted two tyrannids, including the Vermilion Flycatcher, . . . a wren, the Military Blackbird, two species of doves and two of hawks, the Turkey Vulture, Wandering Tattler, Spotted Sandpiper and Cocoi Heron—all exclusive of the oceanic species. Seventeen kinds of land birds have been found at La Plata during March." As for the sea-birds, he lists the Waved Albatross *Diomedea irrorata* (the skin of a bird shot by the lighthouse keeper in November 1924), Brown Pelican, Blue-footed and Masked Booby, Magnificent Frigatebird and Kelp and Laughing Gulls. The two hawks (species?) and the heron have not been recorded before or since, but it should be noted that the rainy season of 1925 was so copious that the island was covered by a lush carpet of herbs, vines and grasses, so environmental conditions might have favoured the wanderings of strong-flying birds. An idea of the vegetation of La Plata in February 1925 can be obtained from Murphy's photographs (Plate 20 of his Volume I).

Oscar T. Owre (1976) first reported that the Waved Albatross, known before to nest only on Isla Española, Galapagos, also bred at La Plata. Following earlier leads provided by the only resident there (the island's caretaker, Sr. Intriago), he visited the island on 31 December 1974, and observed two displaying albatrosses near Punta Machete. On a later visit (15–17 May 1975), Owre found five birds tending their single eggs. His guide reported that the albatrosses had bred there every year during his 8-year stay on La Plata and had reportedly started doing so "four years prior to his residence". In addition to a large goat population, Owre stated that cats and rats were present, and that the Masked Booby colony was regularly "plundered for eggs and young". His report does not mention other bird species.

M. Hurtado was on the island in April 1981 and saw nine adult albatrosses. His assistants reported seeing some 30 individuals later in the season. W. L. N. Tickell briefly visited the island on 20–21 May 1988 and only found one adult incubating an egg. Intensive searching of the surrounding two hectares failed to find any others.

In addition to the albatrosses, the island also hosts the only colony of the Galapagos sea lion *Zalophus californianus wollebaecki* outside the archipelago. Nowak (1987) reports a colony of 12 individuals. Sr. Intriago, who knew La Plata for over 35 years, estimated that there may have been a population of over 50 in previous years. They had been there for as long as he could remember. During our visit only 4 individuals were seen, 3 adults and 1 juvenile. An immature Galapagos sea lion appeared near Bahia de Caraquez, Manabi, in March 1981 (Ortiz-Crespo 1981).

The estimated goat population of 300 (Nowak 1987) has recently been culled by the National Parks authority. There still remains an estimated population of 40–70, including adults and immatures. Other mammals on the island include small breeding populations of feral cats and rats. Bats were also seen around the area of the hotel building. Several reptile species and a scorpion were also collected and deposited at the Católica University Natural History Museum.

Previous reports of fishermen taking gorgonians or 'black coral' (W. L. N. Tickell) and the plundering of Masked Booby *Sula dactylatra* colonies (Owre 1976) are confirmed by our observations. The slaughter of a turtle on the beach, by fishermen, was prevented by us. When questioned the fishermen said there were many turtles in the area which they caught for eating.

Systematic list

The following is an annotated list of the birds found or presumed to be present on the island. Asterisks indicate new records for La Plata.

WAVED ALBATROSS *Diomedea irrorata*

In total 28 albatrosses (22 adults, including 10 pairs, and 6 juveniles) were found. The juveniles ranged from small downy young to much larger ones. Most of the colony was situated just north of Punta Machete in dense vegetation. One pair and chick were found on the upper, flatter part of the island towards Punta Machete, showing that dense colonies are not indispensable for successful breeding.

The colony's history is too fragmentary to ascertain when it first became established or its yearly cycle of events. The absence of albatross records by Richardson in March 1914 might indicate that the birds did not regularly breed then. Murphy visited La Plata at almost the same time of year, in February 1925, but since the rains were heavy and the island was overgrown by vegetation as a result, it is not surprising that he did not see any evidence of albatrosses other than the lighthouse keeper's specimen taken in November 1924. When the Galapagos suffered similar rains in 1982–1983 the large albatross colony there failed to breed (Rechten 1985).

Owre saw displaying birds in December 1974 and incubating individuals the following May, when he learned from an Ecuadorian resident that the island's colony had bred yearly for the previous eight years and started doing so around 1963. This would correspond with the period in the 1960s when for several years virtually no young were reared on Española, Galapagos (Harris 1969). Nowak (*op. cit.*) was at La Plata in October 1985, and reported that he saw only two pairs then. He also found a dead bird that he presumed had been killed by visiting fishermen. Nowak stated that "the breeding seasons of the [La Plata] albatrosses . . . synchronize with those in the Galapagos", and our sighting of large downy young in July 1990 is consistent with an April–June egg-laying period, as in the Galapagos (Harris 1973). Tickell's count may have been low because most of those found in 1990 were not on the upper flats, where he searched, but on the lower plateau.

It would be worthwhile to map the occupied breeding sites and monitor this isolated population, which is separated by over 1000 km from the main population breeding on Española. A banding programme should be undertaken at La Plata as soon as possible

WHITE-VENTED STORM-PETREL *Oceanites gracilis*

Nowak (*op. cit.*) briefly mentions the presence of this species in (or near?) the island in October 1985.

RED-BILLED TROPICBIRD *Phaethon aethereus*

Fifteen nest sites were discovered on the south-facing cliffs. The birds were vocalizing most of the time and seen flying in groups of 2–3. The largest single observation from a cliff edge was of 40 individuals. Murphy (1936) says that La Plata is "probably the southernmost breeding station of the Red-billed Tropic-bird on the west coast of South America".

BROWN PELICAN *Pelecanus occidentalis*

Groups of up to 46 were seen throughout our stay. Many of those seen were immatures; some had moulted to winter plumage.

***RED-FOOTED BOOBY** *Sula sula*

A small breeding colony was found, occupying two bushes within the Masked Booby colony at Punta Escalera. Of the 20 individuals seen, 13 were adults (all of the brown morph), 5 juveniles and 2 chicks. This substantiates that La Plata has the only colony of this species breeding in the entire eastern Pacific other than the one in the Galapagos.

BLUE-FOOTED BOOBY *Sula nebouxii*

These are widespread over the island, both on the cliff faces and inland. In contrast to those breeding in the Galapagos, they seem much more wary of humans. We estimated a population of 3000, based upon three simultaneous dawn counts on both the coastal and inland areas. We also checked that the counts were not affected by movement of birds between the two areas.

MASKED BOOBY *Sula dactylatra*

We found three separate colonies: at Punta Escalera, within the Magnificent Frigatebird colony, and at Punta Machete. A series of three dawn counts was made at each colony and the number of active nests and eggs was recorded, with the following results: Punta Escalera, 254 adults, 162 nest sites (60 with 1 egg, 102 with 2 eggs); frigatebird colony, 71 adults, 3 nest sites (none with eggs); Punta Machete, 399 adults, 18 nest sites (7 with 1 egg, 11 with 2 eggs).

***OLIVACEOUS CORMORANT** *Phalacrocorax olivaceus*

One was present in mid-August. It was seen several times with Blue-footed Boobies perched on rocks, along the shore. This is a common species along the southern Manabi coast.

MAGNIFICENT FRIGATEBIRD *Fregata magnificens*

There is a large colony along the northern coast between Punta Palo Santo and Punta Escalera. From a series of dusk counts made as the birds came in to roost, the population was estimated at 2598 individuals. We observed a downy chick, dependent juveniles, immatures and adults, indicating that they were breeding. Previous accounts have mentioned frigatebirds as present but not breeding on the island (Murphy 1936, Hurtado 1981). Chapman (1926) gives the breeding range as extending south to Santa Clara Island in the Gulf of Guayaquil.

WHITE-NECKED HERON *Ardea cocoi*

Murphy's sighting is the only record.

TURKEY VULTURE *Cathartes aura*

The Black Vulture *Coragyps atratus* is abundant along the local coastal villages, but none were seen on the island. The Turkey Vultures on the island seemed to get their main food supply from fishermen gutting their catches on the beach. They were also seen feeding on Masked Booby eggs and fish regurgitated by the boobies. A maximum of 53 were recorded at one time.

The race reported from La Plata by Chapman (1926), based on one female specimen, is *C. aura jota* of the "Southern Temperate Zone" which ranges south to Chile. Some individuals at La Plata could be wintering austral migrants, but two eggs in an old nest we found may indicate that not all the birds are migrants.

***PLUMBEOUS KITE** *Ictinia plumbea*

One individual was recorded. It died on the island, presumably from cold and exhaustion. The specimen is now in the collection of the Machalilla National Park. Jorge Macias reports having seen one six months earlier on the island.

SPOTTED SANDPIPER *Actitis macularia*

In mid-August one was recorded on the northern beach; it was also seen on other areas of the littoral fringe.

WANDERING TATTLER *Heteroscelus incanus*

One was observed along the northern beach in mid-August. Chapman (1926) reports a specimen taken at La Plata on 11 February.

KELP GULL *Larus dominicanus*
LAUGHING GULL *Larus atricilla*

Recorded only by Murphy (1936)

EARED DOVE *Zenaida auriculata*

Chapman (1926) recorded one unsexed Eared Dove collected at La Plata. This very wide-ranging dove may still occur, as Jorge Macias reported that a dove with white-tipped feathers occurred on the island in addition to smaller wholly dark-tailed ground doves (*Columbina cruziana*).

CROAKING GROUND DOVE *Columbina cruziana*

These were commonly seen, especially in the interior. Chapman (1926) recorded 1 male and 2 females taken by Richardson on the island.

***GROOVE-BILLED ANI** *Crotophaga sulcirostris*

One was observed alive on the island and one partial corpse was also discovered, presumably devoured by feral cats or rats. They are common on the adjacent mainland.

SHORT-TAILED WOODSTAR *Myrmia micrura*

Commonly seen and heard. Aerial displays of territorial birds were seen in mid-August. Chapman (1926) lists 1 male and 2 female specimens from the island.

SHORT-TAILED FIELD TYRANT *Muscigralla brevicauda*

Chapman (1926) recorded 1 female specimen taken by Richardson. Isla de La Plata is at the northern limit of the range, which extends south along the coast to northern Chile.

VERMILION FLYCATCHER *Pyrocephalus rubinus*

Immatures and adults were frequently seen around the island. No melanistic individuals were seen, despite there being a polymorphic population along the Ecuadorian/Peruvian arid coast. Chapman (1926) lists 3 males and 2 females taken at La Plata.

HOUSE WREN *Troglodytes aedon*

Those seen were mainly in the undergrowth behind the hotel building. Chapman (1926) recorded 1 male, 4 females and 1 unsexed specimen collected by Richardson on the island.

LONG-TAILED MOCKINGBIRD *Mimus longicaudatus platensis*

This slightly differentiated insular race is the island's only endemic form (Chapman 1924). It is common all over the island.

PERUVIAN MEADOWLARK *Sturnella bellicosa*

Seen mainly on flat land towards Escalera and at higher elevations. Chapman (1926) recorded 4 males and 1 female specimen collected from the island. According to Richardson, it was one of the most common land birds he encountered.

COLLARED WARBLING-FINCH *Poospiza hispaniolensis*

Common all over the island, especially near human activity. Chapman (1926) lists 11 males and 5 females taken on the island by Richardson.

***YELLOW GROSBEAK** *Pheucticus chrysopeplus*

One individual was seen over a period of three days (24–27 August), mainly in the area of the lighthouse.

***HOUSE SPARROW** *Passer domesticus*

Seen only twice, among Collared Warbling-finches. House Sparrows are common on the adjacent mainland.

A comparison of the La Plata and Galapagos avifaunas

Española in the Galapagos and La Plata share the Waved Albatross, but it is striking that no island in the Galapagos possesses colonies of all three booby species within sight of each other as La Plata does. The Magnificent Frigatebird colony at La Plata seems larger than any in the Galapagos with the possible exception of the colony on Isla Genovesa (where, incidentally, the only Great Frigatebird *Fregata minor* colony known in the eastern Pacific is found). On the other hand, no shearwaters and only one species of storm-petrel have been found on La Plata, while there are at least three resident species of procellariids and two of storm-petrels reported from the Galapagos (Harris 1974). La Plata has no resident egrets, but Lava Herons *Butorides sundevalli* and Yellow-crowned Night Herons *Nyctanassa violacea* occur on most Galapagos islands, perhaps reflecting their complex shoreline structure, with mangrove patches and tidal pools.

Regarding land birds, the most striking similarities are the presence of (a) single mockingbird species on single Galapagos islands and La Plata, and (b) two syntopic tyrannid species (the Vermilion Flycatcher and the endemic *Myiarchus magnirostris*) on the former and two also on La Plata (where the latter species is replaced by *Muscigralla brevicauda*). The most pronounced difference is that, with the exception of the smallest and remotest islands in the Galapagos such as Darwin and Wolf, all of the Galapagos have more than a single species of finch per island, but only the Collared Warbling-finch occurs at La Plata. It is also worth noting that only one dove species is found throughout the Galapagos, the endemic *Zenaida galapagoensis*, whereas two species have been recorded from La Plata. However, one of these, the Eared Dove, has recently been seen in the Galapagos, at Puerto Ayora on Santa Cruz Island (J. Black, pers. comm.). In the Galapagos, other important differences are the absence of vultures (perhaps replaced by the endemic Galapagos Hawk *Buteo galapagoensis*, which sometimes feeds on carrion), hummingbirds, wrens and icterids. In contrast, all the Galapagos islands have the Yellow Warbler *Dendroica petechia* and the larger islands also the Dark-billed Cuckoo *Coccyzus melacoryphus*. The absence of these two from La Plata is not surprising, in view of the lack of mangroves and other arborescent shore vegetation. No resident rails, owls, nor gulls occur on La Plata, while one or two rails, one or two owls and two gulls breed on all the main islands of the Galapagos.

Until systematic bird observations at La Plata have been made over several years little more can be said. Knowledge about the Galapagos is derived from the efforts of hundreds of professional and amateur observers who have created what is essentially a complete bird list. Wet season records are badly needed at La Plata, when one can expect the number of bird species to increase and nesting records to be more representative. It is not impossible that some extinctions have occurred at La Plata, subject as it has been to the combined depredations of people, domestic animals and rats from 1925 to 1975 at least. During our walks we observed dozens of orifices resembling petrel burrows on the flatter areas of the island. It would be interesting to dig out some of them, to ascertain the presence of old bones or feather and eggshell remains, as petrels could have fallen victim to rats and cats as they still do in the Galapagos and other islands. It is also likely that human occupation caused not only overgrazing by cattle, donkeys and goats, but also clearing of woody vegetation for fuel. The small goat population has now been reduced to just a few individuals. Fortunately, La Plata is becoming popular for nature tourists because of its spectacular bird life, because not only sea-lions but breaching Humpback Whales are easily seen around the island for part of the year, and because the neighbouring coast is now accessible by a permananent road. This should help draw attention to conservation needs within the protected Machalilla National Park, and undoubtedly contribute towards gathering more scientific information.

Acknowledgements

The expedition members were P. Agnew, J. Ashworth, M. A. Carrera, P. Harvey, A. Langsdale, G. Romero, A. Stanford and E. Winsor-Cundell. We thank Dr W. L. N. Tickell, Dr T. de Vries, Dr B. Olgaard, R. Williams and J. Tobias for their advice and help. The study was supported by DOW Chemicals, Sea-Fresh Watermaker Systems, the Royal Geographical Society, the British Ecological Society and the University of Bristol. F. Ortiz-Crespo's trip was facilitated by the Ecuadorian Protected Natural Area Department of the National Forest Directorate (DINAF). We are especially thankful to Jorge Macias, Machalilla National Park official, for making the boat arrangements and guiding our group. Mariuxi Prieto, Director of the Ecuadorian Foundation for the Study of Marine Mammals, invited F. Ortiz-Crespo to participate in the visit on 28 July 1990.

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ADDENDUM. When this paper was in press, Dr Ortiz-Crespo was informed of three new records for Isla La Plata obtained by Dr Tjitte de Vries, who visited the island on 8–11 January 1992: Striated Heron *Butorides striatus* (common resident on the adjacent mainland coast), Osprey *Pandion haliaetus* (common boreal migrant to the mainland), and Peregrine Falcon *Falco peregrinus* (regular boreal migrant to the mainland).

Nomenclature of the New Zealand Wandering Albatrosses *Diomedea exulans*

by C. J. R. Robertson & John Warham

Received 18 June 1991

The Wandering Albatrosses breeding in the New Zealand sub-region have customarily been classified as of the typical race *Diomedea exulans exulans*. This is evidently because Salvin (1896) believed that the type drawing, plate 88 in George Edward's *Natural History of Birds* (1747), best fitted a New Zealand bird. However, the type locality designated by Linnaeus (1758) is between the tropics and the Cape of Good Hope, as pointed out by Bourne (1989). The identity of Linnaeus' bird seems to be indeterminable (Robertson 1986) but it is unlikely that it came from New Zealand. We have no evidence that New Zealand birds reach the Cape; rather the contrary for, as recoveries of banded birds and other evidence are showing, New Zealand populations seem restricted to the Pacific Ocean and probably do not circumnavigate the world. We do not agree with the proposal of Bourne (1989) that the small "intermediate" population of the Auckland Islands should be lumped with the large birds from other subantarctic islands (usually classified as *D. e. chionoptera*) under the name *D. e. exulans*. Another of his "intermediate" populations (from Antipodes and Campbell Islands) he leaves unnamed. Therefore we propose to erect two new subspecies, one for the small dark birds that breed at Antipodes and Campbell Islands and the other for the small, pale and early-laying population of the Auckland Islands. Other existing names are unsuitable. *Diomedea exulans rothschildi* Mathews, 1912 is too large a bird to have come from either population (bill 166 mm, wing 650 (worn); tail 190; tarsus 121; Gibson Plumage Score 14). *Diomedea exulans rohui* Mathews, 1915 is bigger and paler (bill 171 mm; wing in moult; tail 206; tarsus 122; Gibson Plumage Score 20.5). Both these specimens fit the characters of the high-latitude race *D. e. chionoptera* Salvin.

Gibson Plumage Scores refer to a scale for coding the plumages of Wandering Albatrosses devised by Gibson (1967) in which the darkness of head, back, inner upperwing and tail are scored and totalled to give a range from 4 to 21. The lighter the plumage the higher the score—see also Warham (1990, p. 24).

In the measurements given here the wing was flattened on a stopped rule.

Diomedea exulans antipodensis subsp. nov.

Holotype. Adult female, National Museum of New Zealand (NMNZ) 23412. Central plateau, Antipodes Island, collected by C. J. R. Robertson 3 March 1985.

Allotype. Adult male, NMNZ 23411, paired with NMNZ 23412. Central Plateau, Antipodes Island, collected by C. J. R. Robertson 3 March 1985.

Paratype. British Museum Natural History (BMNH) 1905.12.30.404, a male taken at the nest but not on egg, at Antipodes Island on 15 January 1903, given to Edward Wilson by Captain Hutton at Christchurch. Other paratypes are: male, NMNZ 21374, collected Antipodes I. 24 November 1978 by C. J. R. Robertson; female, BMNH 1938.4.11.1, collected by N. T. Corbett at Campbell I. on 28 January 1938; and female, NMNZ 21373, collected at Antipodes I. on 24 November 1978 by C. J. R. Robertson.

Specimens examined. 9 skins from Antipodes I. and 5 from Campbell I., together with 128 live birds measured on the breeding grounds.

Distribution. Breeds only at Antipodes and Campbell Islands. Range at sea: to southern and eastern Australian seas and the south Pacific Ocean to the west coast of South America.

Description of holotype (Fig. 1, A & B; Fig. 2, A & D)

(a) Upperparts. Forehead and cheeks white. Crown with uniform dark brown feathers fading into slightly paler brown nape and jugulum. Nape appears mottled due to exposed white bases of the feathers, e.g. as shown in plate 2 of Warham & Bell (1979) and p. 59 in Robertson (1985). Mantle, scapulars, back, rump and tail coverts blackish-brown, feathers slightly paler at edges. Tail sooty black. Wing blackish-brown, exposed primaries darker, coverts slightly paler and concolorous with back.

(b) Underparts. Throat white, rather sharply separated from pale chocolate-brown sides of neck and upper breast but with a band *c*. 15 mm wide of whitish feathers lightly speckled with brown between the two. Upper breast covered with chocolate-brown feathers whose pale edges create a slight scaled effect, the whole forming a bold brown apron *c*. 185 mm deep in the midline. On the lower breast this apron merges into the white belly via an intermediate zone *c*. 80 mm deep of white feathers lightly vermiculated with brownish-grey zigzag bars and grey speckles, the bars 5-7 mm apart. Belly white. More heavily vermiculated feathers extend down the flanks, onto the thighs and towards the upper tail coverts. Lower belly white, lightly speckled with grey-brown and faint vermiculations, heavier towards the vent. Vent covered by chocolate-brown feathers. Under tail coverts pale at bases but exposed parts grey-brown, unbarred and dark at their tips. Tail feathers blackish-brown. Wing white except for exposed sooty black of primaries and edging, *c*. 10 mm wide, of sooty black coverts from the carpal flexure to the base of the outermost primary.

(c) Gibson Plumage Score. 4.5 (head 1, back 1.5, wing 1, tail 1).

(d) Soft parts. Dark suffusion throughout the mandibular unguis.

(e) Measurements. Bill length 149 mm; wing 640 (worn); tail 200; tarsus 112; middle toe & claw 169; head width 60; weight 5.7 kg.

Description of allotype (Fig. 1, A & B; Fig. 2, A & B)

(a) Upper parts. Forehead and cheeks white. Crown white but with blackish-brown feathers forming a cap separated from the nape by white, lightly vermiculated feathers. Mantle and back white, with bold zigzag barrings of blackish-brown. Lower back, rump and tail coverts paler than back but extensively vermiculated throughout. Tail sooty black, some rectrices lightly tipped with whitish. Wing blackish-brown with white bases to coverts and white-freckled coverts exposed at humeral flexure.

Scapulars and lesser coverts white heavily vermiculated with brown and merging with the similar patterned mantle.

(b) Under parts. Throat white, extending further down breast than in holotype and not sharply marked off from the heavily barred feathers of the upper breast because of an intervening zone *c.* 60 mm deep of white feathers with grey brown vermiculations about 10 mm apart. Breast white, the feathers crossed by grey-brown vermiculations and dusted with dark brown spots creating a pale, grey-brown apron. The zigzag barrings on the breast spreading onto the white feathers on the sides of the nape, and to the flanks and thighs, the latter with bars *c.* 2 mm wide and *c.* 10 mm apart. Feathers around vent white but lightly vermiculated, tail coverts white and strongly vermiculated like the thighs. Tail blackish-brown, lateral rectrices mainly white except for blackish tips or black along their narrow vanes. Wing white except for sooty black primaries and a few dark feathers along the leading edge from the carpal joint outwards.

(c) Gibson Plumage Score. 10 (head 4, back 3.5, wing 1.5, tail 1).

(d) Soft parts. Posterior half of mandibular unguis suffused with blackish.

(e) Measurements. Bill length 152 mm; wing 652; tail 204; tarsus 113; middle toe & claw 170; head width 66; weight 8.3 kg.

Diagnosis. Adult females are distinguished from all other populations of *exulans* by their dark brown plumage except for the face, lower belly and underwing, a pattern that resembles the immature plumage of other subspecies. Adult males are distinguished from *D. e. chionoptera* Salvin, 1896 by their smaller size and shorter bill, but not readily separated from many adult *D. e. gibsoni* n. subsp. on size or plumage pattern except that the cap of *antipodensis* is usually more pronounced and the upperwing has less white showing at the humeral flexure. Some adult Tristan da Cunha and Gough Island birds, *D. e. dabbenena* Mathews, 1929, resemble male *antipodensis* but are shorter-winged. From the recently described small, dark albatross *D. amsterdamensis* Roux *et al.*, 1983, *D. e. antipodensis* appears to differ in lacking a prominent black cutting edge to the upper tomia of the bill and in having a smaller black mark along the leading edge of the base of the underwing. *Diomedea amsterdamensis* also lays in the first half of March, much later than birds of the New Zealand region, which have no known contact with members of that form. New Zealand Wandering Albatrosses do not appear to reach the Indian Ocean sector.

Etymology. antipodensis = antipodean.

Diomedea exulans gibsoni subsp. nov.

Holotype. Adult male, NMNZ 23375. Astrolabe Point, Adams Island, Auckland Group, collected by C. J. R. Robertson 15 February 1985.

Allotype. Adult female, NMNZ 18110. Adams Island, collected by B. D. Bell 5 January 1973.

Paratypes. NMNZ 23374 male, collected Adams I. 15 February 1985 by C. J. R. Robertson; and NMNZ 18109 male, collected Adams I. 5 January 1973 by B. D. Bell. We know of no skins of females suitable as paratypes.

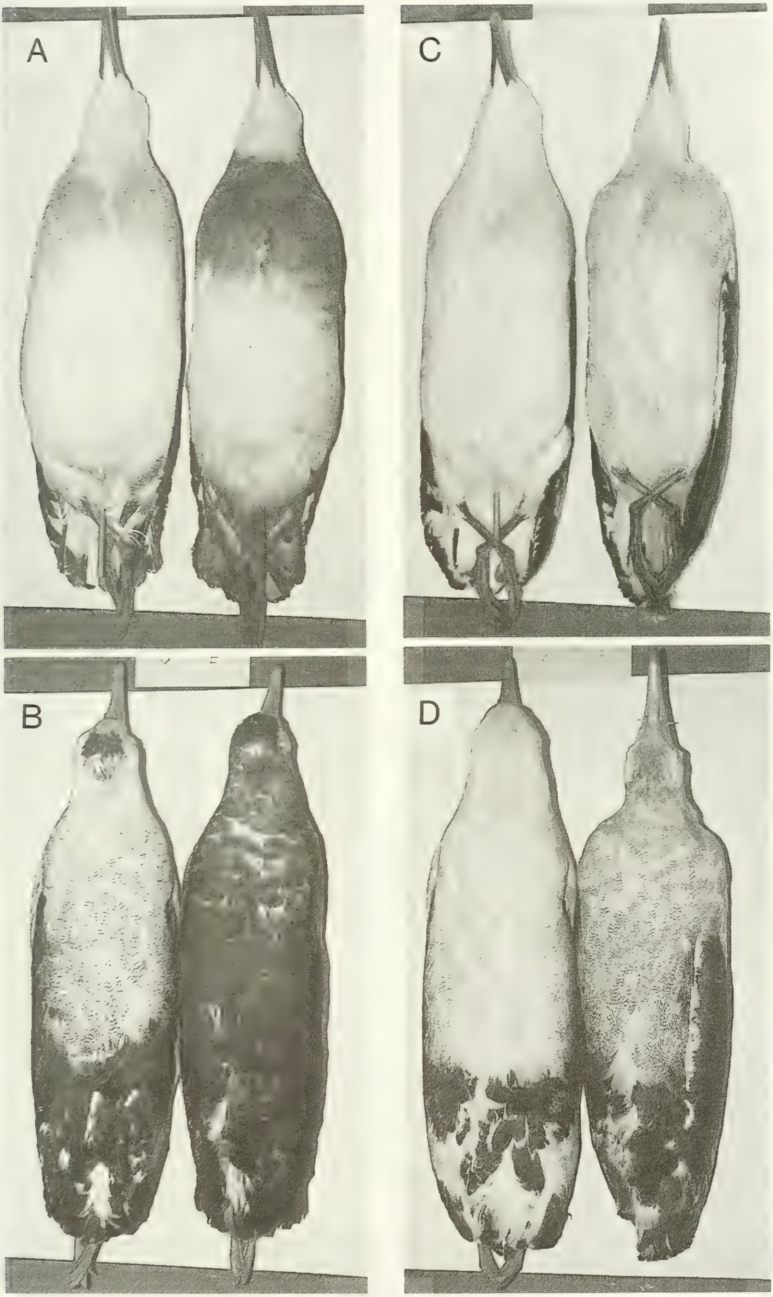

Figure 1.

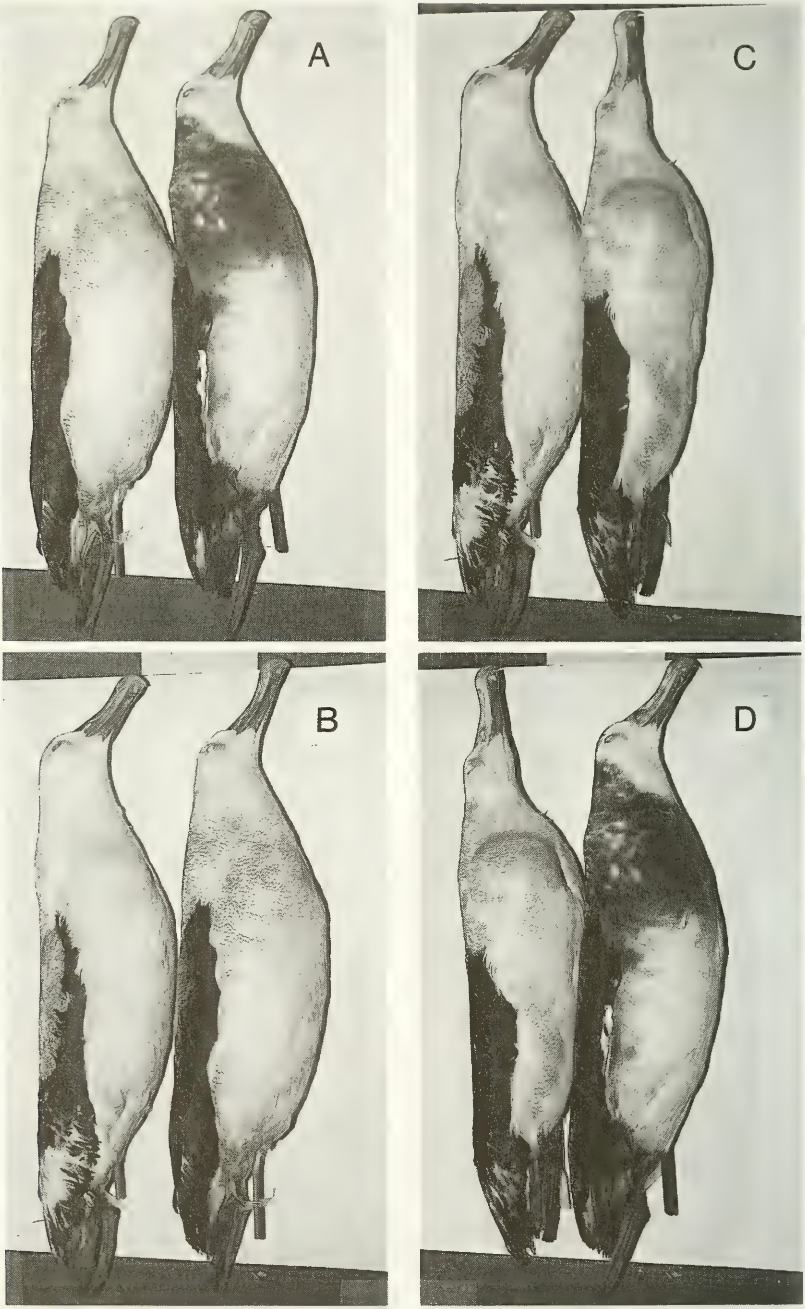

Figure 2.

Specimens examined. 5 skins from the Auckland Islands together with 70 live birds measured on the breeding grounds.

Distribution. Breeds only at the Auckland Islands, on Adams and Disappointment Islands and on the main island of that group. Ranges at sea to southern and eastern Australia and the western south Pacific Ocean.

Description of holotype (Fig. 1, C & D; Fig. 2, B & C)

(a) Upperparts. Forehead and cheeks white. Crown with a few grey-tipped feathers; otherwise this and the nape are white with a slight dusting of greyish. Mantle and back white, the feathers crossed by dark grey-brown vermiculations *c.* 8 mm apart; similarly-patterned feathers extend to the scapular region onto the inner wing and down the sides of the nape. Lower back, rump and tail coverts white very lightly barred with darker zigzag markings. Tail tipped with dark brown but inner vanes of rectrices edged with white which extends to the tips in the lateral feathers. Primaries and their coverts sooty black; many white, faintly vermiculated feathers exposed at the humeral flexure forming a bold white patch. Secondaries blackish-brown with much white on their inner vanes. Coverts and scapulars extensively fringed with whitish.

(b) Underparts. Throat, cheeks and sides of neck white, shading into the pale upper breast where the feathers are lightly vermiculated and dusted with grey to form a faint grey apron *c.* 175 mm deep in the midline. This apron itself shades into the white of the lower breast and belly and out to the flanks and thighs whose white feathers are faintly crossed with zigzag vermiculations, more pronounced on the thighs and widely separated, *c.* 9 mm apart. Feathers in vent area white, very slightly dusted with grey. Undertail coverts white. Rectrices white, the central ones tipped brown, the lateral ones tipped white but with their inner vanes carrying brown splotches or vermiculations, the outermost being the palest. Underwing white except for the black primaries.

(c) Gibson Plumage Score. 15 (head 5, back 4.5, wing 3.5, tail 2).

(d) Soft parts. Base of mandibular unguis and inter-ramicorn with trace of dark blackish-brown.

(e) Measurements. Bill length 152 mm; wing 651; tail 204; tarsus 114; middle toe & claw 162; head width 62; weight 6.6 kg.

Description of allotype (Fig. 1, C & D; Fig. 2, C & D)

(a) Upperparts. Forehead and supraorbital area white. Crown white, but brownish-grey tips to the feathers create a light grey cap which merges into the paler neck whose feathers are white dusted and streaked with brownish-grey. Nape, mantle and back white, heavily vermiculated with brownish-grey. Lower back and tail coverts are whiter as the barrings are less pronounced. Tail blackish-brown. Upperwing dark brown in the middle and outer segments due to the blackish-brown primaries, dark

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Figure 1. A & B: *Diomedea exulans antipodensis*. Male 23411 (left) & female 23412 (right). C & D: *Diomedea exulans gibsoni*. Male 23375 (left) & female 18110 (right).

Figure 2. A: *Diomedea exulans antipodensis*. Male 23411 & female 23412.
B: Males: *D. e. gibsoni* 23375 (left) & *antipodensis* 23411 (right).
C: *D. e. gibsoni*. Male 23375 & female 18110.
D: Females: *D. e. gibsoni* 18110 (left) & *antipodensis* 23412 (right).

brown exposed vanes of the secondaries and dark brown coverts in these segments. At the humeral flexure some of the pale bases of the brown coverts are exposed creating a pale patch in this region. The inner (humeral) segment is paler, the coverts being white very strongly vermiculated with brownish bars so that the wing merges into the similarly patterned scapulars and mantle.

(b) Underparts. Throat and cheeks white. Upper breast feathers white marked with narrow grey zigzag bars and small greyish spots to form a grey apron *c.* 170 mm deep in the midline and not strongly marked off from the white throat and belly. Vermiculations are bolder on sides of the upper breast and on the flanks and extend to the feathers of the thighs, being *c.* 170 mm apart. Vent area white lightly dusted and barred with brownish-grey, exposed tail coverts white with strong vermiculations. Rectrices greyish-brown.

(c) Gibson Plumage Score. 11.5 (head 4.5, back 4, wing 2, tail 1).

(d) Soft parts. Mandibular unguis blotched with blackish marks.

(e) Measurements. Bill length 143.5 mm; wing 616; tail 194; tarsus 106.

Diagnosis. Differs from adult *D. e. chionoptera* in being smaller in all dimensions and from adult *D. e. dabbenena* in being longer-winged (Warham *et al.*, in prep.). Adults have much paler plumage than *antipodensis* of the same sex, so that adult female *gibsoni* may resemble adult male *antipodensis*, whereas male *gibsoni* are much paler than any male *antipodensis* which have darker caps and tails and show little if any white at the humeral flexure.

Etymology. Named for the late J. D. 'Doug' Gibson who, over many years, helped unravel the colour phases of the thousands of Wandering Albatrosses that he banded off New South Wales.

Remarks. The types have been selected as far as possible to be representative of their breeding populations and sexes. For example the Gibson Plumage Scores (means ± S.D.) show, for *antipodensis*: 23411 male 9.0, population mean (43 males) 8.7 ± 1.6 (5.5–11.5); 23412 female 4.5, population mean (45 females) 4.4 ± 0.5 (4–6); and for *gibsoni*: 23375 male 15, population mean (12 males) 14.2 ± 2.4 (10.5–19); 18110 female 11.5, population mean (9 females) 10.2 ± 1.5 (7.5–12).

A few birds at Disappointment Island breed in darker plumage than the other *gibsoni* there and may be indistinguishable from *antipodensis*. One extremely pale 'snowy' bird has been recorded at Adams Island (Bailey & Sorensen 1952, p. 143f): no such birds have been seen at Antipodes Island among the hundreds of Wandering Albatrosses examined there.

In their brown juvenal plumage birds of any of the small populations seem, on present knowledge, indistinguishable, but young *chionoptera* would be larger than young New Zealand birds.

Colours of the legs and particularly of the bill change with the season and activity, and there seems to be little correlation between bill colour in life and that after death. The only feature that consistently persists is dark marks or suffusions on the nails, as noted in the above descriptions.

Acknowledgements

We are grateful to W. C. Clark and R. L. C. Pilgrim for advice on taxonomic matters, W. R. P. Bourne for helpful comments, and the directors and staff of the British Museum

(Natural History), the American Museum of Natural History, the National Museum of New Zealand and the Vienna Museum of Natural History for access to specimens in their care.

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A re-analysis of *Butorides*

by Burt L. Monroe, Jr. & M. Ralph Browning

Received 23 June 1991

Payne (1974) examined a massive series of specimens of the *Butorides striatus* complex that included 837 New World specimens, of which 72 were from Panama; these were assembled from the collections of the American Museum of Natural History (AMNH), Field Museum of Natural History (FMNH), the University of Michigan Museum of Zoology (UMMZ) and the National Museum of Natural History (USNM). From this study emerged the analysis by Payne (1974), in which he developed a hybrid index for neck colour, the single variable that appeared to separate *B. virescens* (Linnaeus, 1758) from *B. striatus* (Linnaeus, 1758). Because of the intermediate nature of specimens from Panama and the southern Lesser Antilles, Payne recommended that the two taxa be lumped into a single species, *B. striatus*, as reflected by his treatment in Peters (1979: 219–226) in which he considered the complex as a single species, *Ardeola striata*.

Payne (1974: 82) based his taxonomic conclusions on specimens that he ranked by comparison with a hybrid index established from a series

TABLE 1

Hybrid index of voucher specimens listed by Payne (1974: 82)

Hybrid index (category)	Specimen catalogue number (USNM)	Colour index (as described by Payne 1974)	Specimen locality (Panama, unless country given in square brackets)
1	263848	grey	Culata [Venezuela]
2	423096	grey, tinge brown	Charco del Toro, Panamá prov.
3	444948	grey, wash brown	Rio Indio, Chilar, Colón
4	400113	brownish grey	Pesé, Herrera
5	448634	greyish brown	La Jagua, Chico, Panamá prov.
6	368472	greyish red-brown	Puerto Lopéz, Guajira [Colombia]
7	206343	reddish brown	Rio Indio, Colón
8	316840	purplish brown	Cocos Island [Costa Rica]
9	468699	dark purplish brown	Almirante, Bocas del Toro

of nine specimens (hereafter termed "voucher specimens") in the USNM. These specimens, each with its hybrid index (hereafter termed "category"), USNM number, neck colour, and locality, are listed in Table 1.

Altough Payne (*op. cit.*) reported that he excluded specimens that had not completed most or all their postjuvenal molt, two of the voucher specimens (5 and 6), as well as some of the other specimens he listed in his tables, are whitish below as in the typical juvenal plumage. The brownish feathers of the tibia of these two voucher specimens are marked with indistinct blackish horizontal 'bars', a condition found in all white-bellied juvenal *virescens*. Voucher specimen 6 also resembles many juveniles of *virescens* in its more orange (less reddish) neck and cheeks; although Payne (1974: 81) indicated that the voucher specimens formed a "smoothly graded series ranging from grey through brown and maroon", the series is clearly interrupted by the colour in voucher specimen 6. The chestnut colour of this specimen extends from the tip of the feather barbs to the shaft, as is the case in adults (and voucher specimens) in categories 7–9. The variation in the brownish colour of specimens 2–5 is unrelated to intensity or shade but is dependent primarily upon the number of brownish barbs on an otherwise greyish neck; furthermore, the brownish colour of the barbs does not extend to the shaft in these specimens.

Payne (1974: 85) believed that the identity of birds in categories 4–6 would be arbitrary, but we conclude that there is a definite break between voucher specimens 5 and 6. The colour of the neck in categories 1–5 is basically grey, with the amount of brownish wash increasing as the scale increases (from "grey" to "greyish brown" in Payne's chart). On the other hand, the neck in categories 6–9 ranges from rufous to dark purplish, with no outward evidence of grey.

In western Panama (west of the Canal Zone), the neck colour generally varies from 6 to 9 in the index; specimens from eastern Panama vary in degrees of brownish wash that range from 2 to 5. Exceptions to this are one specimen from Coclé (category 6) and four from Darién (category 8).

These specimens were collected within the wintering dates (Wetmore 1965) and are probably vagrants. Birds from central Panama, with consistently higher amounts of brownish wash (mostly 3–5), were named as a subspecies, *Butorides striatus patens* Griscom, 1929, but this name is now generally synonymized with *striatus*.

It is frequently mentioned (e.g. Payne 1974: 84) that South American birds sometimes have a varying amount of brownish neck wash; indeed, an examination of other *striatus* at the USNM revealed several with a category 4 rating from Colombia and Venezuela, with scattered individuals of this ranking as far south as Paraguay (no. 390676). This does not seem abnormal, simply a reflection of normal variation in the species, which in typical South American *striatus* ranges from 1 to 4, with the greatest majority 1–3 and but a few at 4 at the brownish-grey end of the spectrum. Following this logic geographically to the north, by the time Panama is reached (excluding Darién), the range of variation has shifted slightly to 2–5, with but a few in category 5. We are somewhat puzzled by the discrepancy between Payne's chart on p. 83 (his Figure I), in which the entire sample of 72 Panamanian birds shows 14 '5s' and no '4s', and his chart of p. 84 (Figure II), which indicates 11 '4s', 5 '5s', and one '4–5'. Regardless of the judgment of 4 or 5, the fact remains that Panamanian *striatus* score 2–5, a range of variability equivalent to American *striatus* in South America except shifted up one level in the index; the two '1s' Payne shows from Canal Zone (we noted one only from Colón) were undoubtedly vagrant individuals, inasmuch as *striatus* wanders north as far as Costa Rica. Because of the great overlap and the fact that the difference is primarily in the slightly increased amount of brownish wash, we agree that *patens* is not worthy of subspecific recognition. But we wish to make it clear that we believe '*patens*' not to be a highly variable intermediate population but rather one in which the range of variation is comparable to that found elsewhere in the species; thus the "approach" in colour to *virescens* may be coincidental and part of normal geographic variability rather than an indicator of genetic introgression.

Turning our attention now to '*virescens*' (categories 6–9), we find that specimens from Bocas del Toro are typical *virescens* (categories 7–9), representing both the resident Middle American form (sometimes called *B. v. maculatus* (Boddaert, 1783)) and the migrant North American one (typical *virescens*); these forms are lumped by Payne and are indeed virtually indistinguishable. Typical *virescens* then occurs south to northwestern Panama; the species reappears as '*B. v. margaritophilus* Oberholser, 1912' in the Pearl Islands (categories 7–8), a form also properly merged with typical *virescens*. Records from farther south in Panama and northern South America (range 7–9) are all from the nonbreeding season and undoubtedly represent wintering or vagrant individuals.

Specimens in category 6 might be regarded (and indeed have been) as showing introgression. Payne does not record a single 6 from Panama in his chart on p.84 and listed but two out of his total of 72 on p. 83; we found but a single Panamanian bird (collected in early March in Coclé) that could be graded a 6. It appears to be a typical *virescens* with a lighter shade of rufous-brown on the neck; the bird does not appear to be intermediate between *virescens* and *striatus*, being much more like typical *virescens*. We point out also that the lighter shade of rufous-brown is typical of Lesser Antillean birds. Although we did not do an extensive analysis of Antillean birds, it is our opinion that this Panamanian individual as well as the Colombian bird that Payne used as the voucher specimen for 6 in the index are either vagrants from the Lesser Antillean populations or else extreme variants of typical *virescens*, more likely the former.

It has been suggested that introgression is extensive in the southern Caribbean region, as evidenced by the large number of 5s and 6s (see Payne's chart, p. 83), but if introgression occurs there, it is at a very low level. Recently, Voous (1986, and pers. comm.) has determined that any 'intermediates' in the area of close approach or possible overlap in the southern Lesser Antilles amount to no more than 6% of the population. It seems likely that even this low percentage may be based on vagrant *B. striatus* (category 5). In any case, there is no evidence of significant introgression in the Lesser Antilles. *B. striatus* is also the resident form on Trinidad, whereas it is *B. virescens* on Tobago and the Lesser Antilles to the north. Of great interest in all this is that not once, in Panama or the Antilles, has a mixed breeding pair ever been reported.

Based on this analysis, we feel that there is no substantial evidence that there is interbreeding, and certainly if it occurs at all, it must be at a low level. Thus *B. virescens* (Green Heron) and *B. striatus* (Striated Heron) should be regarded as separate species unless there is strong new evidence to the contrary.

Acknowledgements

We thank Richard C. Banks, John W. Fitzpatrick, Thomas R. Howell, Ned K. Johnson, Henri Ouellet, J. V. Remsen and Robert W. Storer, all members of the American Ornithologists' Union Committee on Classification and Nomenclature, for assistance in examination of the specimens at the U.S. National Museum and for input into the analysis presented above. K. H. Voous was also helpful in providing personal information regarding the Lesser Antillean situation.

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APPENDIX

Other Panamanian specimens, arranged by hybrid index, as determined by the authors—total 49, including voucher specimens: 28 *virescens* (indices 6–9), 21 *striatus* (indices 1–5).

Hybrid index (category)	Specimen catalogue number (USNM)	Specimen locality
1	385963	Jaqué, Darién
1	385964	Jaqué, Darién
1	444949	Rio Indio, Chilar, Colón
2	469773	Mouth of Río Paya, Darién
2	385961	Jaqué, Darién
2	385962	Jaqué, Darién
2	448635	La Jagua, Chico, Panamá prov.
2	533940	nr. Gatun Locks, Canal Zone
3	444947	Rio Indio, Chilar, Colón
3	400111	El Barrero, Herrera
4	476623	Las Palentas, Los Santos
4	460544	Juan Mina, Canal Zone
4	400112	El Rincón, Herrera
4	389642	Río Jaqué, Darién
5	460546	Juan Mina, Canal Zone
5	400109	Santa Maria, Herrera
6	444951	El Uracillo, Coclé
7	444950	El Uracillo, Coclé
7	206342	Río Caña Quebrado, [state?]
7	460541	Isla Coiba
7	460542	La Lajas, Chiriquí
7	400108	Paris, Herrera
7	400110	Santa Maria, Herrera
7	206340	Rio Indio, Canal Zone
7	206341	Rio Indio, Canal Zone
7	471157	Isla del Rey, Pearl Is. [***margaritophilus***]
8	376004	San José I., Pearl Is. [***margaritophilus***]
8	376005	San José I., Pearl Is. [***margaritophilus***]
8	376013	San José I., Pearl Is. [***margaritophilus***]
8	376104	San José I., Pearl Is. [***margaritophilus***]
8	200443	San Miguel I., Pearl Is. [***margaritophilus***]
8	423097	Chivrán, Panamá prov.
8	206746	Gatun, Canal Zone
8	423097	Chivrán, Panamá prov.
8	305592	near Yavisa, Darién
8	305594	near Yavisa, Darién
8	385960	Jaqué, Darién
8	206344	Rio Indio, Canal Zone
9	460540	La Lajas, Chiriquí
9	606050	Chiriquí Lagoon, Bocas del Toro

Observations on the *campo, cerrado* and forest avifaunas of eastern Dpto. Santa Cruz, Bolivia, including 21 species new to the country

by John M. Bates, Theodore A. Parker III, Angelo P. Capparella & Tristan J. Davis

Received 5 July 1991

The grasslands (*campos*) and open, grassy woodlands (*cerrados*) of central Brazil and extreme eastern Bolivia are unusually rich in endemic species of plants and animals (Müller 1973, Cracraft 1985). More than 20 bird species are restricted to this vegetation on the Brazilian Plateau, and many of these species are threatened by habitat loss due to the extraordinarily rapid rate of environmental degradation caused by large-scale mechanized agriculture and cattle-ranching. Annual burning and overgrazing of grasslands throughout central Brazil have led to severe declines in many of the grassland species (Goriup 1988). The identification and protection of representative examples of these grassland ecosystems should be placed high on the list of conservation priorities in Brazil and adjacent eastern Bolivia.

Until recently, the plant and animal communities of eastern Bolivia were largely undescribed. The Serranía de Huanchaca (also known as the Serranía de Caparuch), a large (150 × 75 km) section of the Brazilian shield, isolated from similar areas to the east, remained unexplored. The Bolivian sections of this plateau are now protected within the Parque Nacional Noel Kempff Mercado (PNNKM). Recent botanical surveys of the area, although brief, revealed the presence of extensive areas of several types of upland grasslands, including *campo limpo, campo sujo*, and *campo rupestre*, as well as a variety of wooded habitats characteristic of central Brazil, such as *cerrado, cerradão*, and gallery forest (T. J. Killeen, pers. comm.). Brazilian examples of these habitats have been described in detail by Goodland (1971) and Eiten (1978).

We report here the results of continuing ornithological surveys of the PNNKM and adjacent lands of the Reserva Forestal "Bajo Paraguá". These areas form the northeastern corner of the Department of Santa Cruz in eastern Bolivia. Field work in 1989 spanned four months (mid-June to mid-October) and concentrated on habitats and sites not surveyed on a 1988 expedition to the same region (Bates *et al.* 1989). This inventory is a joint project involving personnel from the Museum of Natural Science (Louisiana State University, LSUMNS), the Museo de Historia Natural "Noel Kempff Mercado" (Universidad Autónoma "Gabriel Rene Moreno", Santa Cruz de la Sierra, Bolivia, MHNNKM), and the PNNKM. Our focus on this expedition was the *campos, cerrados*, and islands of forest vegetation on top of the Serranía de Huanchaca, with remaining time spent in forests along the western base of the plateau (along the Río Paraguá).

Serranía habitat and localities. The top of the plateau (500,000 ha) is a mosaic of naturally isolated Amazonian and deciduous forest patches associated with water courses. These forest patches are separated by a spectrum of open country habitats ranging from pure *campo* to dense *cerrado.* "Camp 1" in the northern part of the serranía was in a forest fragment of *c.* 600 ha, 21 km south of Catarata Arco Iris (13°55′S, 60°45′W, elev. 670 m). A satellite camp was also set up in a *c.* 1500 ha fragment, separated from the 600 ha fragment by 1 km of *campo.* Catarata Arco Iris is the main waterfall on the Río Paucerna as it runs off the serranía to the north. From these camps, birds were surveyed in both forest and open country from 24 June through 18 July. Participants were John M. Bates (JMB), Angelo Capparella (APC), Maria Dolores Carreño, Abel Castillo (AC), Jorge Cayalo, Curtis Marantz (CAM), and Manuel and Marta Sánchez.

"Camp 2" was at the southern end of the plateau in a forest fragment (*c.* 500 ha) surrounded by open *campo* with small patches of *cerrado* and strips of gallery forest. In addition, *campo rupestre* occurred along the rocky crests and upper slopes of ridges in the open *campo.* Although never occurring over extensive areas, *campo rupestre* is characterized by a highly endemic flora of grasses, bushes and trees. Camp 2 is *c.* 45 km east of the town of Florida (14°34′S, 60°40′W, elev. 720 m), and was visited briefly on 24–26 August, and studied intensively from 26 September through 15 October. Participants were JMB, AC, Tristan J. Davis (TJD), Hugo H. Hurtado, Theodore A. Parker (TAP) and Gary H. Rosenberg (GHR).

West bank of the Río Paraguá localities. Three areas west of the Río Paraguá were surveyed, including two forest sites 10 and 13 km SSW of Piso Firme and flooded grassland (*pantanal*) 6 km SSW of Piso Firme. Piso Firme (13°35′S, 60°55′W, elev. *c.* 250 m) is a small town on the west bank of the Río Paraguá (formally in Depto. Beni), *c.* 4 km from the Paraguá's confluence with the Río Iténez (the Spanish name; Rio Guaporé is the Portuguese name; Paynter *et al.* 1975). These sites were all worked between 19 July and 4 August. Participants were the same as those listed for camp 1.

The habitat west of the Paraguá consists of low-canopy, evergreen tropical forest, which had been harvested to varying extents for selected palm and lumber trees. Our camps were along a road into forest where palm hearts were being harvested. Adjacent to the site 13 km SSW was a 30 ha patch of dense *cerrado* surrounded by forest.

Los Fierros. Tall forests in this area at the western base of the serranía, but east of the Río Paraguá, were studied and described previously (Bates *et al.* 1989). This very diverse region was visited again in 1989 from 28 August through 25 September by TJD, with briefer visits by TAP, JMB and AC. In addition to collecting specific species in the tall forest, we concentrated our efforts in nearby seasonally flooded grassland with small patches of *cerrado* woodland.

Remsen & Traylor (1989) listed 1274 species for Bolivia, of which 306 have been reported for the PNNKM (Bates *et al.* 1989). The 1989 expedition produced 21 new species for Bolivia, and 224 new species for the PNNKM (Bates *et al.* in prep.). We report here on the 21 species new for the country (indicated by an asterisk following the name) and provide notes on some other poorly known species. The 21 new species came from a variety of habitats: Amazonian forest (5), forest edges/gallery forest (9), *campo/cerrado* (7). Gonad data are given only for specimens considered to be in breeding condition. All specimens collected are housed in the LSUMNS and the MHNNKM. Tape recordings are housed in the Library of Natural Sounds (LNS), laboratory of Ornithology, Cornell University.

We also include some unpublished records from collections made in 1964 and 1965 by Javier Cuello of the Museo Nacional de Historia Natural, Montevideo, Uruguay. Cuello collected along the Río Mamoré and Río Iténez in Dpto. Beni and deposited this material at the American Museum of Natural History (AMNH). The collection includes Bolivian specimens that predate several published "first records" for Bolivia (Cabot *et al.* in press, Bates *et al.* 1989). In addition to being first records for the country, these are also new records for Dpto. Beni and represent additional Bolivian localities to the northwest of our sites, providing further evidence that the major headwater river of the Río Madeira that separates allotaxa of the Inambari and Rondonian areas of endemism (*sensu* Cracraft 1985) is the Río Mamoré.

Species accounts

RUSSET-CROWNED CRAKE *Laterallus viridis**

On 8 July, APC observed an individual perched low in a shrub in tall, well-drained grassland with scattered bushes and small trees near camp 1. This bird was not collected. Subsequently, we learned that J. Cuello collected two individuals on 2 May 1964 (AMNH 791736, 791737) on the Bolivian side of the Río Iténez near the mouth of the Río Mamoré. These represent the first documented records of this widespread species for Bolivia. Niethammer's (1953) sight record of this species from Dpto. La Paz was considered hypothetical by Remsen & Traylor (1989).

BLACK-BELLIED CUCKOO *Piaya melanogaster*

TAP and JMB saw a pair and heard another individual in the canopy of stunted forest (*c.* 14 m tall) on sandy soil near Los Fierros on 29 August. TJD collected a male in the company of another bird in the same area on 6 September and saw solitary individuals inside and in tall forest edge around Los Fierros on 10 and 21 September. The only other Bolivian records of *P. melanogaster* are from Dpto. Pando (Parker & Remsen 1987) and Dpto. La Paz, along the upper Río Madidi (sight records, TAP pers. obs.).

STYGIAN OWL *Asio stygius**

On 4 July, AC and APC flushed a pair of this species from a wooded ravine in brushy *campo* and collected a female (MHNNKM). The only previous report for Bolivia, a sight record from upper montane cloud-forest in Dpto. Cochabamba (Fjeldså & Krabbe 1990) was considered hypothetical by Remsen & Traylor (1989).

LONG-TAILED POTOO *Nyctibius aethereus**

The distinctive *ahoóo* call of this poorly known species was regularly heard in the canopy of tall forest at Los Fierros, where one or two individuals were taped by TAP and GHR (LNS) between 28 August and 15 October. Two individuals were especially vocal on the later date, under a full moon.

Although this is the first Bolivian record of *N. aethereus*, the species has recently been found in numerous localities in eastern Peru (TAP pers. obs.) and has now been recorded from Argentina (Stranek & Johnson 1990). It has undoubtedly been overlooked because it prefers the interior of forests versus forest-edges frequented by *N. griseus* and to a lesser extent by *N. grandis*. *N. aethereus* may prove to be more common than the latter species in many *terra firme* forests of upper Amazonia.

LEAST NIGHTHAWK *Chordeiles pusillus**

This small nighthawk is apparently fairly common, at least from July through October, in dry grasslands of PNNKM. In July, CAM and others flushed one or two individuals on several occasions from roosting sites on gravelly slopes with sparse vegetation near camp 1. The first Bolivian specimen was collected by TAP on 30 August as it foraged at dusk over dry (but seasonally flooded) grasslands near Los Fierros. This individual is a female with heavy fat. On 29 September, TJD collected a male, with no fat and 4 × 5 mm testes, over a rocky hillside near camp 2. In this area, we repeatedly saw pairs of birds flying together at dusk. GHR recorded vocalizations of one individual (LNS) as it foraged low over open grassland.

CHAPMAN'S SWIFT *Chaetura chapmani**

Late August sightings of pairs or small groups of up to 6 large, all-dark swifts flying over dry (seasonally flooded) grasslands on several occasions near Los Fierros and on the southern part of the plateau are believed to be this species (TAP). These birds were seen both alone and in the company of large flocks of White-collared Swifts *Streptoprocne zonaris*.

SPOTTED PUFFBIRD *Bucco tamatia**

Four individuals mist-netted in forest fragments at camp 1 in early July, and four others collected by TJD in stunted forest on sandy soil near Los Fierros in early September, are the first records for Bolivia. A female collected at Los Fierros had an enlarged ovary, an ovum 15 mm in diameter and an oviduct 12 mm wide. This widespread species is generally restricted to seasonally flooded (*varzea*) forests (Remsen & Parker 1983), but also occurs in adjacent second-growth woodlands (TAP pers. obs.).

CAMPO MINER *Geobates poecilopterus**

This *campo* endemic was first found by JMB on 2 October in recently-burned open *campo* near a small stream at camp 2. Over the next few days up to eight additional miners were observed displaying over similar (burned) habitat. Three males collected at this time all had enlarged testes averaging 4 × 9 mm. The display by the males consisted of a hovering flight 3–10 m above the female on the ground below. During this laboured flight, males displayed their chestnut-and-white underwing coverts and gave long musical rattles (LNS). Flights and rattles lasted for up to

30 seconds. Display flights were observed for only 6 days, and the birds thereafter became silent and inconspicuous. Despite extensive coverage, no *G. poecilopterus* had been found in this area in late August nor in late September, before fires swept through a large portion of the grasslands on this part of the plateau. This species may disperse facultatively to breed in recently-burned grasslands, which may explain its apparently local distribution in the *campos* of central Brazil (TAP pers. obs.).

RUFOUS-WINGED ANTSHRIKE *Thamnophilus torquatus*

On top of the serranía, this antshrike was uncommon and inconspicuous at camp 1 and apparently rare at camp 2 where only one individual was seen. The species frequents shrubby areas with scattered trees in the transitional zone between more open *cerrados* and gallery forests. It was also encountered in thickets near streams where Barred Antshrikes *T. doliatus* were also seen. The only previous report of *T. torquatus* in Bolivia is from the "plains of Guayaros" south of the park (Peters 1951).

LARGE-BILLED ANTWREN *Herpsilochmus longirostris*

On 29 September, TJD collected a female of a pair from the canopy of a small (<1 ha) patch of gallery forest surrounded by grassland near camp 2. He collected a pair on 6 October in the same area. GHR and JMB saw a male in similar habitat along a stream flowing into a larger forest island (>200 ha) on 7 October. TJD found several additional pairs in other isolated patches of gallery forest along small streams on 8 and 11 October. The species was replaced by *H. rufimarginatus* in larger forest islands. The 4 specimens collected by TJD, and two males (AMNH 792009, 792010) collected in Dpto. Beni along the Río Iténez "frente Costa Margues" by J. Cuello on 6 and 17 September 1964 (Davis & O'Neill 1986), are the only Bolivian specimens. Sight records reported as *Herpsilochmus pileatus* by Remsen (1986) at Estancia Inglaterra, Dpto. Beni, are also believed to have been this species.

YELLOW-BREASTED FLYCATCHER *Tolmomyias flaviventris flaviventris**

This canopy species was fairly common along the edges of forest islands on the Serranía and was also found in somewhat stunted forest on sandy soils near Los Fierros and Piso Firme. AC collected two individuals near camp 1 on 1 and 3 July, and a third on 31 July south of Piso Firme. These specimens represent the first records of nominate *T. f. flaviventris* for Bolivia. TAP (unpubl. obs.) has found the call notes and songs of the subspecies with bright yellow underparts (*flaviventris, aurulentus, collingwoodi*, and *dissors*) to be different in quality and pattern from the subspecies with duller underparts (*subsimilis, viridiceps* and *zimmeri*). Vocalizations of the latter forms consist of clear explosive *chip* notes usually delivered in an accelerating series. The first four subspecies give shorter series of buzzy, thin *ssst* or *tseeep* notes (recordings in LNS). Vocal as well as morphological characters (Zimmer 1939) strongly suggest that the two groups represent at least two biological species: *T. flaviventris* and *T. viridiceps*. Specimens of "*borbae*" from along the Rio Madeira, Brazil, considered by Hellmayr (1927) to be intermediate between *flaviventris* and *viridiceps*, were later assigned to *viridiceps* by Zimmer (1939). Thus, these *Tolmomyias* are similar to numerous other species pairs that are also separated by the Rio Madeira (Hellmayr 1910, Haffer 1969, Cracraft 1985).

PLANALTO TYRANNULET *Phyllomyias fasciatus*

The first Bolivian record for this species was an individual collected in 1987 from a site at the western base of the serranía near Los Fierros (Cabot *et al.* 1988). TAP, JMB and AC observed and tape-recorded a pair calling in the same area on 28 August. These individuals were in forest-edge canopy *c.* 15–20 m above the ground, within 100 m of tall *cerrado* woodland. On 28 September, TJD observed a pair in the canopy of open *cerrado* woodland at the edge of the large forest island at camp 2. He collected a calling male on 1 October, with a left testis 9 × 5 mm, in the same general area. The Huanchaca specimen is greyer above than four specimens from southeastern Brazil referred to *P. f. brevirostris* (3 LSUMNS and 1 University of Kansas). Thus, the Huanchaca specimen presumably represents *P. f. fasciatus* of central Brazil. A new form of this species has also been found recently in the Andean foothills of Dpto. Beni (Parker *et al.* 1991).

RUFOUS-TAILED ATTILA *Attila phoenicurus**

On 25 August TAP, JMB, and TJD tape-recorded songs (LNS) of an individual singing from the canopy of the large forest island at camp 2. TJD and JMB heard an individual singing again in the same area in late September but were unable to collect the bird. The species has been reported from western Mato Grosso, and as far north as Amazonas, in southern Venezuela (Traylor 1979), but is only found regularly (from October through January) in the forested mountains of Rio de Janeiro (TAP pers. obs., Sick 1984) and Rio Grande do Sul (Belton 1985). The southeastern population is apparently migratory (Belton 1985), and widely scattered Amazonian records may represent austral migrants.

ZIMMER'S TODY-TYRANT *Hemitriccus aenigma**

This little-known species was uncommon in the canopy of stunted forest on sandy soil near Los Fierros. Widely-spaced pairs foraged from *c.* 8–12 m above the ground within foliage and vine tangles. Five pairs were found along *c.* 1.5 km of this habitat (TAP), and TJD collected 7 individuals in late August and early September in the same general area. In August 1990, TAP and Omar Rocha found 2–3 *H. aenigma* in the canopy of stunted forest along the edge of a large forest island near camp 1, at the northern end of the serranía, as well as in taller forest on lateritic soil at Versalles, Dpto. Beni (Parker *et al.* 1991). Vocalizations of *H. aenigma* consist of a variety of short trills and twittering notes (LNS) reminiscent of the calls of the Eared Pygmy-tyrant *Myiornis auricularis*. These notes, while loud, are ventriloquial. This species was, until recently, known only from the type series collected on the right bank of the Rio Tapajos, western Pará, Brazil (D. F. Stotz pers. comm.).

RUFOUS-SIDED PYGMY-TYRANT *Euscarthmus rufomarginatus**

On 25 June, JMB collected a female from a pair in tall grass mixed with scattered bushes and small trees (*campo sujo*) near camp 1. CAM later taped two other individuals in the same area (LNS). A few other individuals were located during October fieldwork at camp 2 (TJD, JMB). These represent the first records of the species for Bolivia. TAP and O. Rocha found and studied four additional pairs near camp 1 in late August 1990; details of these observations will be reported elsewhere (Parker & Willis MS). This species has apparently declined throughout most of its Brazilian range due to the over-grazing, over-burning and conversion of its grassland habitat into agricultural land (Goriup 1988). The Huanchaca plateau may support the largest remaining tracts of pristine *campo sujo* habitat anywhere.

CRESTED ELAENIA *Elaenia cristata**

This species was common in *cerrado* woodland and along the edges of gallery forest at the north end of the serranía throughout June. A large series of specimens and numerous observations represent the first records for Bolivia. Although individuals were noted in pairs and seemed to be territorial (JMB pers. obs.), the species was curiously scarce at the same site in August 1990 (TAP pers. obs.), when far outnumbered by both *E. flavogaster* and *E. chiriquensis*. We reserve judgment on the seasonal status of *E. cristata* in the park, until more data are available on the seasonal distributions of all of the 6 species of *Elaenia* that have been recorded.

HELMETED MANAKIN *Antilophia galeata**

This species was common in gallery forests and along the edges of larger forest islands at camp 2. One female was also mist-netted in a forest fragment at camp 1. Males were vocal, giving a variety of rich slurred whistles as they moved from exposed perch to perch in the forest understory and middlestory. They were found singly and were dispersed, barely within earshot of neighbouring males. Thus, they did not appear to be engaged in any type of communal display. A female collected on 26 September at camp 2 had an enlarged ovary and thinly shelled egg in its oviduct. Miguel Marini (*in litt.*) has pointed out that Ihering (1898) included Bolivia in the range of this species; however, no precise Bolivian locality was given, and Remsen & Traylor (1989) did not include the species as occurring in Bolivia.

BLACK MANAKIN *Xenopipo atronitens**

A female mist-netted at the edge of a forest fragment at camp 1 on 13 July, and an immature male netted in the island of *cerrado* woodland surrounded by closed-canopy evergreen forest 13 km SSW of Piso Firme on 31 July represent the first Bolivian records for this species. This poorly known bird occurs primarily in islands of stunted forest on sandy soil both north and south of the Amazon (TAP pers. obs.). The species has also been found along the lower Río Heath, Peru, within 5 km of the Bolivian border (Graham *et al.* 1980) and no doubt occurs in stunted forests of the intervening Departments of northern Bolivia.

PALE-BELLIED TYRANT-MANAKIN *Neopelma pallescens**

Two individuals were mist-netted and another was collected by JMB in forest fragments at camp 1. The bird collected by JMB was repeatedly giving a loud call note from 1 m up in gallery forest understory at the edge of a forest fragment. These are the westernmost records for this species, as well as the first Bolivian records. In lowland forests along the Río Paucerna at the western base of the serranía, we have recorded only

X. sulphureiventer, which has not been found on top of the plateau. These species had not been known to occur in such close proximity.

POMPADOUR COTINGA *Xipholena punicea**

On 30 August, TAP saw a male Pompadour Cotinga displaying to three females 35 m up in forest canopy along a road near Los Fierros. TJD collected a lone female in the same area on 10 September. This bird had an ovum 9 mm in diameter, an oviduct 13 mm wide and a brood patch. Our records are the first for Bolivia and the southernmost for the species, which was rare at a site along the Río Ji-Parana in Rondonia, Brazil (D. F. Stotz, in Remsen & Traylor 1989). *X. punicea* is known from only a few localities south of the Amazon.

CURL-CRESTED JAY *Cyanocorax cristatellus**

This species was fairly common and conspicuous in open *cerrado* and gallery forest-edge near camp 2, and one small flock was seen in *cerrado* woodland at the western base of the serranía in late August (TAP). In August, 1990, TAP and Rocha observed a flock in dense *cerrado* at the northern end of the serranía. Although usually observed in flocks of 6–9 individuals, a lone pair of *C. cristatellus* was building a large stick nest 7 m up in branches of an isolated tree in rocky, open habitat near camp 2 on 25 August. These are the westernmost records for this *cerrado* inhabitant and the first Bolivian records of the species. The only record of another jay species for the park is a flock of *C. cyanomelas* seen by TJD in early September (1989) along the edge of taller forest in the same area where TAP had observed *C. cristatellus* in August. Although both species are known to occur together (within the same flocks occasionally) in central Brazil (Ridgely & Tudor 1989), they appear separated in this part of Bolivia.

TOOTH-BILLED WREN *Odontorchilus cinereus**

This poorly-known canopy wren was fairly common in a narrow zone of tall, humid forest within 2 km of the serranía at Arroyo del Encanto and Los Fierros (see Bates *et al*. 1989). Pairs and presumably family groups of 3–4 individuals were observed there with 4 large, mixed-species flocks, all of which also contained *Xenops tenuirostris, Tolmomyias assimilis, Hylophilus muscicapinus* and *Tachyphonus cristatus*. Although quite inconspicuous as they foraged within foliage along slender branches in the uppermost canopy (25–35 m), both members of pairs sang persistently. The most commonly heard song was a vibrating, high-pitched trill about 3 seconds long, similar to that of a Pine Warbler *Dendroica pinus*. In response to playback, and while counter-singing, some individuals gave 1–2 very different song types, such as a high-pitched series of *swee* notes (LNS). A specimen was collected by Carmelo Peña from a canopy flock well west of the plateau, 13 km SW of Piso Firme on 25 June. On 1 September near Arroyo del Encanto, TJD collected a female, with an unshelled egg in its oviduct, from a canopy flock that included 3 other *O. cinereus*. TJD also collected a male on 11 September near Los Fierros. These are the first records for Bolivia for this species previously known only from Brazil between the upper Rios Madeira and Tapajos (Meyer de Schauensee 1966).

BUFF-CHEEKED GREENLET *Hylophilus muscicapinus**

This widespread Amazonian species was common in the canopy of tall forest throughout the park, including the large forest islands on top of the plateau. Pairs were heard (and occasionally seen) in most mixed-species canopy flocks. On 13 July, AC collected the first Bolivian specimen in the forest fragments at camp 1. On 31 August, TAP collected a male, with testes measuring 7 × 5 mm, from a canopy flock near Los Fierros. TJD collected three more males in early September from the same area.

RED-SHOULDERED TANAGER *Tachyphonus phoenicius**

Two females of this species were collected in July at camp 1, along the edges of forest fragments bordering *cerrado*, and TJD collected a male near Los Fierros on 7 September in stunted forest-edge bordering grassland. These are the first Bolivian records of this species, that shares with several other species now known from the park, such as *Tangara cayana* and *Sicalis citrina*, a patchy distribution in Amazonia reflecting the island-like distribution of relict grasslands and associated woodlands.

BLUE-NECKED TANAGER *Tangara cyanicollis*

This species has an unusually disjunct range (but see *Carduelis olivacea* below) that includes the lower slopes of the eastern Andes from Venezuela to Bolivia and the northern edge of the Brazilian shield in central Brazil (Isler & Isler 1987). We found it to be uncommon in the canopy of all forest sites visited in 1989. Although most frequently found in small groups of 3–4 along the edges of gallery forest and large forest islands, a few were also noted in the canopy of open *cerrado* woodland within 200 m of taller forest. A female collected by CAM at camp 1 on 28 June had an enlarged oviduct 9 mm wide, and another female collected by GHR on 7 October at camp 2 had an ovum 5 mm in diameter. Our Huanchaca specimens may represent an undescribed form that differs from other populations in having more extensive dark blue on the throat.

BLUE FINCH *Porphyrospiza caerulescens*

This species was one of the most common passerines in *campo rupestre* at the southern end of the serranía. We collected a series of 14 birds including adults of both sexes and young males that had not reached adult plumage. In late August, Blue Finches were found primarily in small groups of 4–6 individuals, including both adult and immature males and females. These were frequently in association with pairs or families of Black-throated Saltators *Saltator atricollis*, another patchily distributed *cerrado* species. Ridgely & Tudor (1989) list the species' habitat as "open grassy *cerrado* with scattered trees"; but in the PNNKM these finches were most common in *campo rupestre*, where they foraged on the ground and flushed to the tops of rocks or bushes when disturbed. Groups of up to six individuals were noted in unburned, streamside brush in days immediately after a fire swept through much of the area in early October. Shortly after this, males were singing from exposed perches throughout the burned *campo rupestre*. Parker & Rocha (1991) provide more behavioural information from a recently discovered population on the Cerro San Simón, Dpto. Beni, *c*. 150 km NW of PNNKM.

The Huanchaca records may be the first undoubted occurrence of *P. caerulescens* in Bolivia. The only previous record from Cuevo, Dpto. Chuquisaca (Laubmann 1930), has been questioned (Ridgely & Tudor 1989) because the specialized habitat of this species has not been reported from west of the Brazilian shield plateaus. Ridgely & Tudor (1989) list *P. caerulescens* as a species whose status "is cause for concern". The extensive rocky *campos* of the Serranía de Huanchaca undoubtedly support one of the largest protected populations of this species.

On a taxonomic note, we agree with Ridgely & Tudor (1989) that *Pophyrospiza* does not belong in the genus *Passerina* (*contra* Paynter 1970). We see little vocal or behavioural similarity between *P. caerulescens* and any member of the Cardinalinae. Its songs, thin wispy series of *sweeu* notes, as described by Ridgely & Tudor (1989), are similar to those of emberizids such as *Volatinia* and *Haplospiza*, and very different from the melodious whistled songs of buntings, grosbeaks and saltators.

BLACK-AND-TAWNY SEEDEATER *Sporophila nigrorufa*

On 29 August, TAP observed at least two adult male *S. nigrorufa* among flocks of 600 or more *Sporophila* spp. in dry (but seasonally flooded) grassland at the western base of the serranía south of Los Fierros. *S. nigrorufa* was known from fewer than 10 specimens and a few sight records from extreme eastern Bolivia and southwestern Brazil (Ridgely & Tudor 1989). The birds foraged on grass seeds in association with numbers of *S. ruficollis* (20–30 males) and *S. hypochroma* (10–20 males), as well as smaller numbers of *S. hypoxantha*. Most individuals in these flocks were unidentifiable juvenile and female *Sporophila*. From these flocks, we obtained a series of *S. ruficollis* males, and one male *S. hypochroma*, collected by TJD.

COAL-CRESTED FINCH *Charitospiza eucosma**

On 7 October, TJD collected a male from a pair found in recently burned *campo* with scattered trees and bushes. A more thorough search of the same area over the next several days revealed the presence of at least 15 singing males and an equal number of females. The birds' behaviour suggested they were in the process of establishing territories. Four males collected at this time had testes averaging 6 × 3 mm, but 4 females showed no enlargement of the ovary. As with *Geobates poecilopterus*, we feel certain that this species appeared in the area within days of a fire that burned a large expanse of *campo*. *Charitospiza eucosma* was seen only in burned wooded *campo*. In central Brazil, this species has a patchy distribution in both *campo sujo* and taller *cerrado* (TAP pers. obs., Ridgely & Tudor 1989), and its local movements have been associated with fires (Ridgely & Tudor 1989, Cavalcanti 1990). A pair that established a territory in charred *cerrado* habitat in Brasilia National Park remained within its *c.* 2 ha territory for at least 3 years following the initial fire (i.e., long after the vegetation returned to its original lush condition). In another area *c.* 30 km NE of Brasilia, TAP and A. Negret found 4–5 pairs of *Charitospiza* in October 1985, in *c.* 3 ha of recently burned *cerrado* with small trees and bushes. With little effort, 3 nests each with three eggs were found.

OLIVACEOUS SISKIN *Carduelis olivacea*

Two females collected by TJD in *cerrado* at the edge of a forest fragment on the southern end of the serranía on 2 and 13 October, have been tentatively identified as *Carduelis olivacea*, previously known in Bolivia from montane forests in Dptos. Cochabamba and La Paz (Remsen & Traylor 1989). In comparisons with the similar *C. magellanica santaecrucis*, the PNNKM birds are smaller (in wing length, tail length, and culmen length), and have yellow instead of white feathers on the lower belly. An additional difference appears to exist in bill colour, which is lighter (grey to dusky horn) in *C. magellanica*. Whether the Huanchaca specimens represent an isolated and possibly undescribed form of *C. olivacea* is not yet determined; however, at least two other taxa, *Tangara cyanicollis* and *Odontorchilus branickii/cinereus*, have similar Andean/central Brazilian distributions.

Cuello specimens

J. Cuello collected the following specimens from this region before specimens or sight records reported by Bates *et al.* (1989) and Cabot *et al.* (1988); hence, Cuello's records represent the first for Bolivia. All records are from Dpto. Beni: *Pyrrhura rhodogaster* (AMNH 791770), *Nyctiprogne leucopyga* (AMNH 791795-802), *Pteroglossus bitorquatus* (AMNH 791872), *Piculus flavigula* (AMNH 791906-7) and *Dendrocolaptes concolor* (AMNH 791936-7).

Conservation

The extensive areas of *campo* and *cerrado* habitats in the Parque Nacional Noel Kempff Mercado, both on top of and below the Serranía de Huanchaca, have become extremely important in a conservation sense due to massive destruction of these habitats in central Brazil. The largest remaining pristine examples of *campo limpo, campo sujo, campo rupestre*, and *cerrado* (*sensu* Eiten 1978) probably occur within this park. Together, these habitats encompass *c.* 500,000 ha of the park, primarily on top of the plateau. Large populations of numerous potentially threatened bird taxa occur within the park, including 6 species endemic to the Brazilian shield (*Geobates poecilopterus, Euscarthmus rufomarginatus, Antilophia galeata, Cyanocorax cristatellus, Porphyrospiza caerulescens*, and *Charitospiza eucosma*) that have been not previously reported from Bolivia. The Serranía de Huanchaca is apparently the western distributional limit for these species. Future zoological and botanical surveys will no doubt reveal the presence of many more animal and plant species now considered endemic to central Brazil, as well as smaller numbers of taxa endemic to the plateau itself. The conservation importance of PNNKM is further increased by the presence of a surprisingly rich avifauna in lowland, evergreen forest along both the eastern and western sides of the serranía (Bates *et al.* 1989).

Acknowledgements

The 1989 Expedition was funded by National Geographic Society grant 4089-89 to J. V. Remsen. Additional support came from Mrs Paquita Machris. The staff of the PNNKM under the direction of Ing. Nestor Ruiz generously provided logistical support.

We wish to thank especially Ing. Gregorio CerroGrande. Lic. Arturo Moscoso V., Dpto. de Vida Silvestre, Centro de Desarrollo Forestal, Santa Cruz, and Lic. Teresa R. de Centurión and the staff of the Museo de Historia Natural "Noel Kempff Mercado" provided advice and help throughout our work in Bolivia. Manuel and Marta Sanchez, Carmelo Peña, Juan Surubí and the people of Florida and Piso Firme were invaluable in setting up and maintaining the various camps. Armando Yepez was an indispensable field hand and companion throughout our fieldwork. Finally special thanks go to Hermes Justiniano for his interest in our project and for his patience in flying our large group all over the serranía without the slightest incident. J. V. Remsen and D. F. Stotz provided comments on the manuscript.

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Geographic variation in the Sharp-billed Treehunter *Heliobletus contaminatus*

by José Maria Cardoso da Silva & Douglas F. Stotz

Received 8 July 1991

The Sharp-billed Treehunter *Heliobletus contaminatus* is a small (13–15 g) forest-dwelling furnariid of southeastern Brazil, from Espiríto Santo to Rio Grande do Sul, eastern Paraguay, and northeastern Argentina (Misiones) (Meyer de Schauensee 1966). It is a common species in tall forest, where in associates with mixed-species flocks (Sick 1985, Stotz, pers. obs.).

The species was described from specimens collected at Nova Friburgo, Rio de Janeiro (Hellmayr 1925), and has been considered monotypic (Pinto 1978, Vaurie 1980). We have examined 60 specimens of *H. contaminatus* in the Museu de Zoologia da Universidade de São Paulo (MZUSP) and the Museu Nacional do Rio de Janeiro (MNRJ). We discovered that the population distributed south of the northeastern part of the state of São Paulo is quite distinct from the more northerly populations. We propose to name this population

Heliobletus contaminatus camargoi subsp. nov.

Holotype. ♂, MZUSP 27638, Porto Cabral, Rio Paraná, São Paulo, Brazil. Collected 26 October 1941 by J. Lima.

Diagnosis. Possesses broad buffy streaks on the upper back, while nominate *contaminatus* has a plain back or pale hairstreaks caused by a pale rachis. In addition, *camargoi* averages larger (wing and tail, see Table 1) and has the buffy streaks on the lower breast and abdomen broader and more extensive than the nominate form.

Description of holotype. Upperparts Antique Brown (colour 37; capitalized colour names and numbers from Smithe 1975), crown feathers narrowly streaked with Cream Colour (colour 54) and darkening laterally to Sepia (colour 219), feathers of upper back broadly centred with Cream Colour, tertials and broad edges to other remiges and wing coverts (otherwise Hair Brown, colour 119A) near Antique Brown, but slightly more rufous, tail Cinnamon-Rufous (colour 40). Lores and broad superciliary stripe extending along nape Buff-Yellow (colour 53), sides of face mainly Sepia with auriculars based with Buff-Yellow, the sides of the neck Buff-Yellow, with an ochraceous tone, nearly joining the superciliary to enclose the dark sides of the face. Throat including malar region pale Buff-Yellow, paler in centre; remainder of underparts Light Drab (colour 119C), with broad streaks of Cream Colour, these becoming narrower on the abdomen; undertail coverts slightly darker with rufous tone and narrow pale streaks in centre.

Measurements of holotype. Flattened wing 70.0 mm; tail 55.0 mm; culmen length from anterior edge of nostril 8.9 mm, from base of skull 14.6 mm; tarsus 18.3 mm.

Distribution (see specimens examined and Fig. 1). Known from Brazil from São Paulo, south and west of the city of São Paulo, south to Rio Grande do Sul. We have not examined specimens from Argentina or Paraguay, but they should be referable to this form.

Etymology. We take great pleasure in naming this subspecies for our good friend and colleague, Dr Hélio F. Camargo, in recognition of his important contributions to Brazil ornithology and, especially, the avian collection of the Museu de Zoologia da Universidade de São Paulo.

Specimens examined. H. c. contaminatus. Rio de Janeiro: Teresópolis (5♀, 1♂), Nova Friburgo (2♂), Mauá (1♂), Parque Nacional do Itatiaia (2♂, 2♀). *H. c. contaminatus × camargoi*. São Paulo: Serra da Bocaina (4♂, 2♀), Bananal (3♂, 1♀), Mogi das Cruzes (1♂), Campos do Jordão (1♂), Salesópolis (2♂, 3♀), Paranapiacaba (1♂), Alto da Serra (1♂), Ubatuba (1♂), Campo Grande (1♂, 1♀). *H. c. camargoi*. São Paulo: Itararé (4♂), Porto Cabral (1♂), Osasco (1♂, 1♀), Baurú (1?), Rio Feio (1♂, 1♀), Embu-guaçu (1♀); Paraná: Castro (1♂, 3♀), Corvo (2♂, 1♀); Santa Catarina: Porto Feliz (2♂, 3♀); Rio Grande do Sul: Canela (1♂), São João do Monte Negro (1♂).

Remarks. The two populations have an extensive zone of intergradation. Populations within this region tend to be quite variable in the extent of back streaking. There is a general trend toward increased number and size in the back streaks as one moves south through the zone of intergradation. However, even in the southern localities of Campo Grande and Salesópolis there are specimens with only a few hairstreaks that would appear at home among the series of *contaminatus*. There occur alongside specimens that match specimens of *camargoi*, as well as intermediate specimens.

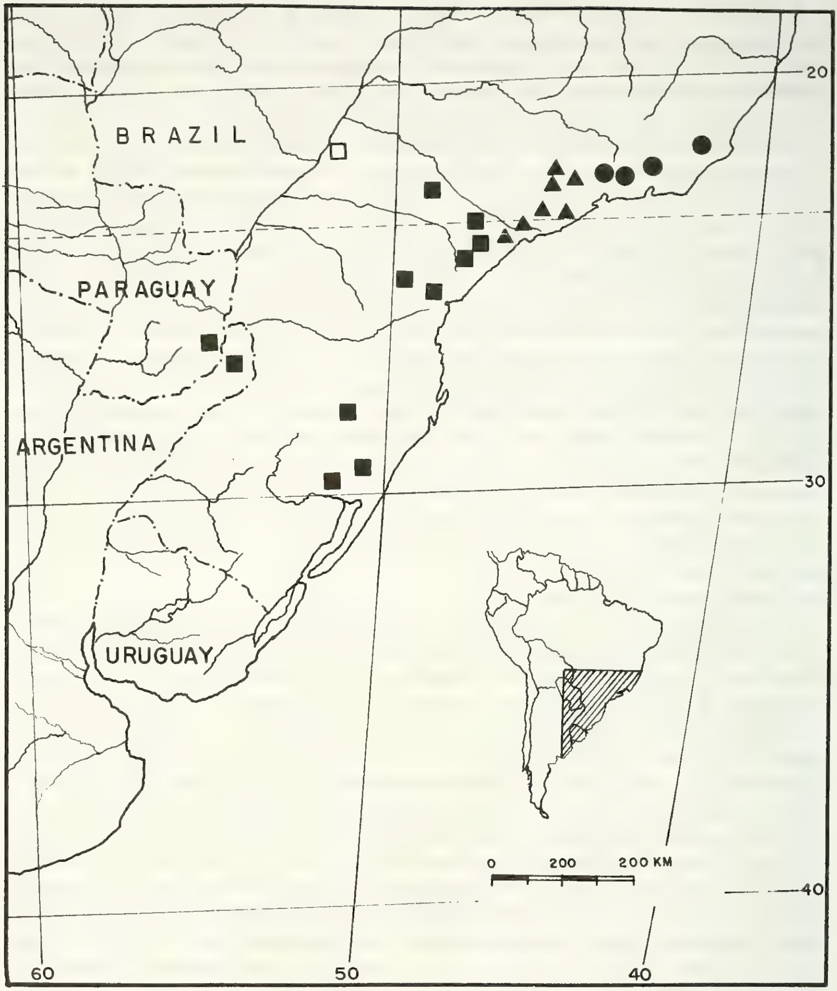

Figure 1. Distribution of *Heliobletus contaminatus*: ●, *H. c. contaminatus*; ▲, *H. c. contaminatus* × *H. c. camargoi*; ☐, type locality of *H. c. camargoi*; ■, *H. c. camargoi*.

Nominate *contaminatus* is significantly larger than *camargoi* in both wing and tail measurements, populations in the zone of intergradation being intermediate (Table 1). Bill and tarsal measurements do not differ between the taxa. Despite the differences in wing and tail measurements, there is substantial overlap between the two subspecies. In the zone of intergradation, birds seem especially variable. In parallel with the plumage variation, size decreases on average from north to south. However, within localities, specimens with plumage characters resembling *contaminatus* do not tend to be larger than those resembling *camargoi*.

TABLE 1

Measurements of populations of *Heliobletus contaminatus*. The first line gives range and sample size (in parentheses), the second mean and standard deviation (in parentheses)

		Wing (flattened)	Tail
H. c. contaminatus	♂	70.0–78.0 (10)	55.0–64.0 (9)
		73.2 (2.8)	59.0 (3.2)
	♀	67.0–71.0 (3)	55.0, 52.5
		68.5 (2.2)	
H. c. contaminatus ×	♂	66.0–78.0 (15)	51.5–62.0 (15)
H. c. camargoi		72.0 (3.0)	56.9 (3.2)
	♀	65.0–73.5 (7)	51.5–58.5 (7)
		68.6 (3.3)	54.5 (2.1)
H. c. camargoi	♂	66.0–75.0 (11)	51.5–55.0 (8)
		69.1 (2.9)	55.3 (3.0)
	♀	64.0–68.0 (11)	52.0–55.5 (8)
		64.5 (1.1)	53.9 (1.3)

The pattern of variation shown by *Heliobletus contaminatus* is very similar to that in another forest furnariid endemic to southeastern Brazil, *Cichlocolaptes leucophrys*. It has a northern subspecies (*holti*) and a southern subspecies (*leucophrys*), which intergrade in the extreme northeastern part of São Paulo, Serra da Bocaina (Pinto 1978). However, *Heliobletus* shows evidence of intergradation over a wider area, extending farther to the west (to Campos do Jordão) and south (to the outskirts of the city of São Paulo), than in *Cichlocolaptes*.

Acknowledgements

We would like to thank Profs. D. M. Teixeira, J. B. Nacinovic and G. Luigi for their help to JMCS at the Museu Nacional. The studies of JMCS were supported by the Conselho Nacional de Desenvolvimento Cientifico e Tecnológico (CNPq), the John D. and Catherine T. MacArthur Foundation/World Wildlife Fund-US and the Museu Paraense Emílio Goeldi, while those of DFS were supported by the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP).

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The identification of *Euplectes* species in non-breeding plumage

by A. J. F. K. Craig

Received 10 July 1991

The genus *Euplectes* as currently defined (Hall & Moreau 1970) includes 16 Afrotropical ploceid species of savanna and grasslands. Many have extensive geographical ranges, and five or more species may be found sympatrically at a single locality (cf. Hall & Moreau 1970, Lewis & Pomeroy 1989). Hybrids have been recorded in captivity (Colahan & Craig 1981), but have not been reported from free-living populations to date. In the breeding season male birds have distinctive nuptial plumage, but during the non-breeding season their eclipse plumage may resemble that of females and subadult males very closely, and then they lack obvious species-specific features. This has led to major identification problems, even in the hand; in every museum collection which I have examined, I have found misidentified specimens in eclipse plumage.

While preparing species accounts for a forthcoming volume of *Birds of Africa*, I have examined and measured large series of specimens of all *Euplectes* species, and I also have field experience of eight species from ringing and behavioural studies in southern Africa. In the field, the South African species of *Euplectes* in eclipse plumage can be identified visually with practice, and the flight calls of the species which I know well are distinguishable by ear, and in sonagrams (Craig 1976). This paper is intended to assist in identifying birds in the hand, particularly museum specimens, although some of the characters may also prove useful in the field.

In all *Euplectes* species which have been studied to date, males are polygynous and do not acquire nuptial plumage in the first breeding season after hatching (Craig 1980). Sexual dimorphism in size is most striking in the Longtailed Widow *E. progne* (Craig 1989), and three age and sex categories can often be distinguished on the basis of body size: adult males, subadult males, and females (e.g. Craig & Manson 1981). For several species the age at first breeding is not definitely known, and it may exceed two years. A complete post-juvenile moult appears to be characteristic of this genus, and probably of all African ploceids (Craig 1983). Juvenile birds can be recognised by a general buffy tone to the plumage, but this is retained for only a few months after hatching. Juveniles and subadult males resemble females in plumage, but adult males of some species retain characteristic plumage features in eclipse plumage. This group will be dealt with first.

Key to *Euplectes* males with black remiges in eclipse plumage

1. Coloured epaulet present 2
   No coloured epaulet 6

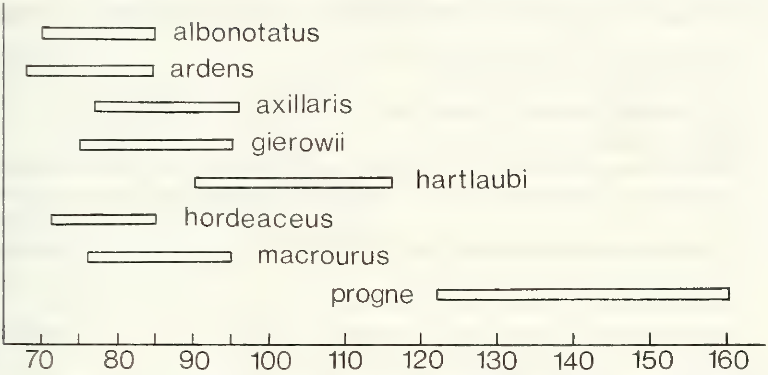

Figure 1. Wing-length ranges (mm) of male *Euplectes* with black primary remiges. Sample sizes are: 72 *albonotatus*; 137 *ardens*; 132 *axillaris*; 57 *gierowii*; 65 *hartlaubi*; 137 *hordeaceus*; 106 *macrourus*; 236 *progne*.

2. Epaulet with yellow feathers 3
   Epaulet with red or orange feathers 5
3. Yellow rump . . . . *capensis*
   No yellow rump 4
4. White underwing, white on epaulet . . . . *albonotatus*
   Buffy underwing, only yellow on epaulet . . . . *macrourus*
   Sooty underwing, yellow and buff epaulet . . . . *hartlaubi*
5. Cinnamon brown underwing, rectrices broad and rounded *axillaris*
   Sooty underwing, rectrices narrow and pointed . . . . *progne*
6. Rectrices narrow, pointed, undertail coverts dark with whitish margins . . . . *ardens*
   Rectrices rounded, undertail coverts plain 7
7. Very dark dorsally, outermost primary long (>15 mm) . . *gierowii*
   Brown dorsally, outermost primary short (<10 mm) . . *hordeaceus*

Figure 1 gives an indication of the ranges of wing-length represented by these species. All measurements were taken by me personally on museum specimens, and I have included birds from most geographical areas in these samples, which are intended as a broad guide only. Clearly male *E. progne* are larger than any other species, with *hartlaubi* the next largest and overlapping little with the other species. A full account of geographical variation in size in the different species groups will be published elsewhere.

In all female and subadult birds the bill colour is brown or horn, whereas in breeding males it is black or bluish. For the Red Bishop *E. orix*, and possibly some other species, the change in bill colour can be correlated with testicular development and used as an index of breeding condition (Craig 1975). However, male Red-shouldered Widows *E. axillaris* acquire a blue bill in their first breeding season, and the colour is retained thereafter. Thus birds with black remiges and brown bills are one year old and have undergone their second complete moult, but have not yet bred (Craig & Manson 1981). This sequence may apply to other species also.

Key to *Euplectes* species with brown remiges in eclipse plumage

1.	Rump feathers yellowish coloured	*capensis*
	No coloured region on rump	2
2.	Underwing coverts white or pale	3
	Underwing coverts not white	4
3.	Small yellow or cinnamon epaulet, tawny brown dorsally	*albonotatus*
	No epaulet, cinnamon patch on chest, cinnamon brown dorsally	*aureus*
4.	Underwing coverts bright cinnamon brown	*axillaris*
	Underwing coverts sooty	5
	Underwing coverts brown or buffy	9
5.	Leading edge of wing bright orange-brown	*hartlaubi*
	Leading edge of wing dark or sooty	6
6.	Small epaulet, lesser coverts orange-brown	*progne*
	No epaulet	7
7.	Outermost primary long (>15 mm)	*gierowii*
	Outermost primary short (<10 mm)	8
8.	Undertail coverts pointed, with dark central markings, chest lacks streaks or spots	*ardens*
	Undertail coverts unmarked, chest with narrow brown streaks on feathers	*hordeaceus*
9.	Epaulet pale orange-brown	*jacksoni*
	Epaulet pale yellow	*macrourus*
	No epaulet	10
10.	Chest with clear band of heavy streaking, broad yellowish superciliary stripe	*afer*
	Chest with general streaking, or streaks faint to absent	11
11.	Undertail coverts pointed with dark central markings	*ardens*
	Undertail coverts not pointed, light coloured	12
12.	Chest and flanks with streaky markings	*orix*
	Ventral streaks absent or very restricted	13
13.	Primary remiges with yellowish margins	*diadematus*
	Primary remiges with buff margins	14
14.	No ventral streaking	*nigroventris*
	Faint streaking on chest and flanks	*franciscanus*

Figure 2 shows the size ranges of the species in the second key, compiled in the same way as Figure 1. *E. progne* is again the largest species, but there is considerable overlap in size with *E. hartlaubi* and *jacksoni*, and these species may be locally sympatric. In size *E. orix* can overlap with all species except *progne*, but the largest birds occur in the southwestern Cape in South Africa (pers. obs.). In South Africa, male *E. orix* are noticeably more heavily streaked ventrally than females, and this may apply to other species too. Southern birds also tend to be more streaked than northern populations, but *E. orix* always seems to lack buff patches on the chest. The red bishops are similar in general appearance in eclipse plumage, but *E. gierowii* and *hordeaceus* are much heavier-billed than *franciscanus, nigroventris* and *orix*. Ventrally *gierowii* is much darker than the other species.

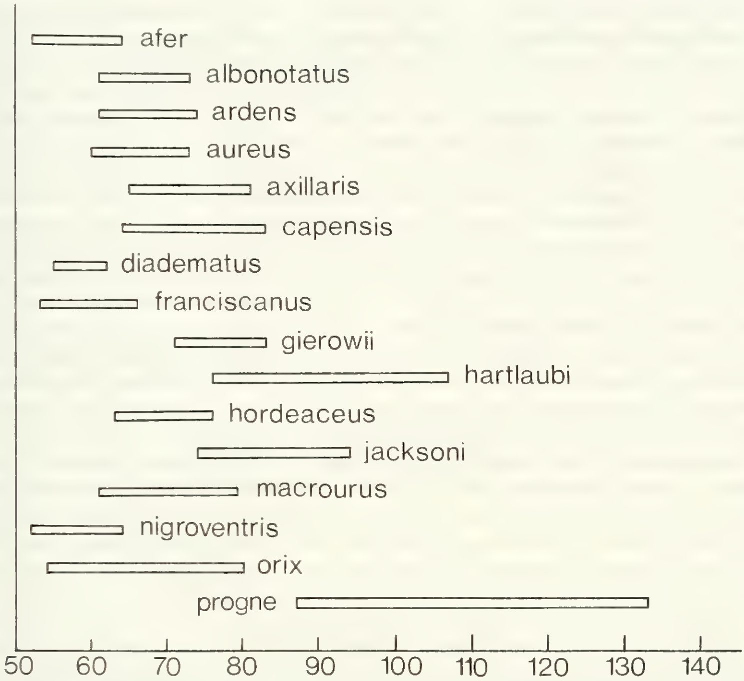

Figure 2. Wing-length ranges (mm) of male and female *Euplectes* with brown primary remiges. Sample sizes are: 99 *afer*; 57 *albonotatus*; 106 *ardens*; 42 *aureus*; 61 *axillaris*; 83 *capensis*; 24 *diadematus*; 144 *franciscanus*; 28 *gierowii*; 69 *hartlaubi*; 97 *hordeaceus*; 94 *jacksoni*; 108 *macrourus*; 81 *nigroventris*; 152 *orix*; 113 *progne*.

The four smallest species, *E. afer, diadematus, franciscanus* and *nigroventris*, may be sympatric in parts of East Africa. *E. afer* is darkly streaked dorsally, while the superciliary stripe is generally very broad and prominent, extending from the base of the bill to the ear coverts. Both *diadematus* and *nigroventris* have a similar restricted range in the coastal region of Kenya (Lewis & Pomeroy 1989). However, *diadematus* generally has a narrow buff collar across the upper chest, which is absent in *nigroventris*. *E. franciscanus* can occur with *diadematus* in Somalia (Ash & Miskell 1983), and may also have buffy areas on the chest, particularly in birds from Kenya and Uganda. East African birds seem to be little streaked ventrally, while the West African populations are more heavily streaked and resemble *E. orix* more closely.

E. capensis is distinctive, since all races and age classes have both yellow edging to the epaulet feathers and a yellowish patch on the rump; this is the only species with a coloured area on the rump in eclipse plumage. The birds are also heavily streaked ventrally, but in different populations the bill of male birds may be uniform black or black above and white below, and the remiges and rectrices may be brown or black. Hall & Moreau (1970) regard this species as closest to *E. aureus*, in which the dorsal feathers are broadly edged with cinnamon brown, and a cinnamon patch on the chest contrasts with the pale chin and belly.

Male *E. axillaris* with black remiges resemble *E. progne* in the same plumage, but they are considerably smaller (Fig. 1), and lack pointed rectrices. Brown-plumaged birds always have cinnamon edging to the epaulet feathers and the cinnamon underwing is found only in this species. Within its restricted range, *E. jacksoni* is only likely to be confused with *progne*, but can be separated immediately on underwing colour. *E. hartlaubi* is another species which resembles *progne* in some respects, but apart from the bright edges to the wing, it has a very heavy bill, much deeper than that of *progne* and with a prominent shield on the frons.

E. albonotatus has a whitish underwing and is very pale ventrally. The most similar species is *macrourus*, which also has a yellow epaulet, but it has a brown underwing and is heavier-billed, with dark ventral plumage.

The most widespread species in the genus is *E. ardens*, which is also variable in a number of characters, and it makes up the largest proportion of misidentified specimens which I have found. A sooty underwing is typical of southern birds, but elsewhere the underwing may have brown feathers. The bill is more slender than in similar-sized species, and the worn rectrices may be quite pointed, while the shape and markings of the undertail coverts do seem to be consistent in all populations. In most populations an unstreaked chest with yellowish-buff colouring is a reliable character, but the montane races in East Africa *E. ardens laticaudus* and *E. a. suahelicus* may have a streaky chest (see key). Bowen (1931) noted males of *E. a. suahelicus* in post-nuptial moult growing long rectrices, and it appears from the specimens which I have seen that in this race and *E. a. laticaudus* males retain long rectrices in eclipse plumage. This should be checked in the field.

There have been few attempts to provide keys for the identification of brown-plumaged *Euplectes*. Delacour & Edmond-Blanc (1933) gave a detailed key to males in eclipse plumage and females, and their descriptions are accurate. However, *franciscanus* was not treated as a separate species, and the key uses measurements which will overlap substantially in some populations. Schouteden (1960) provided a key to the *Euplectes* species recorded in Zaire, Rwanda and Burundi. He noted differences in the colour of the underwing coverts, but also made use of measurements which are typical only of the populations in this region of Africa. For West Africa, Dekeyser & Derivot (1966) included ploceids and estrildids in the same key, and in some instances several species are not separated by their key. Similarly the keys in Mackworth-Praed & Grant (1955, 1962, 1973) include weavers, sparrows and waxbills, so that they become very difficult to use, and there are certainly some errors. Belcher (1930) drew up a useful key to the *Euplectes* species in Malawi, and Priest (1936) included it in his book, noting those species which occurred in his region.

In southern Africa, Borrett & Brooke (1970) described the eclipse plumages of *Euplectes* from Zimbabwe briefly, but left the identification problems unresolved. The *Vidua* species which they included in their discussion are readily separated from ploceids by the head pattern; either with a prominent central stripe on the crown, or a uniform brown cap.

Recently Johnson & Horner (1986) have produced a key to seven southern African *Euplectes* species, together with the Red-billed Quelea *Quelea quelea* and the Red-headed Quelea *Q. erythrops*. These two species can be confused with *Euplectes* species, and are often associated with them in flocks. Further north, the Cardinal Quelea *Q. cardinalis* closely resembles the Red-headed Quelea in the hand (R. Medland, pers. comm.), and in dorsal view these two species are very like the Red Bishop, although the queleas' bill is deeper and more powerful. However, queleas are unstreaked ventrally, very faintly streaked on the crown which tends to be greyish or yellowish, with a yellow or orange tinge to the feathers around the base of the bill, and they have greenish-yellow outer margins to the primary remiges.

Johnson & Horner (1986) are the first to have used wing formulas to characterise *Euplectes* species. This system is widely used for identifying passerine birds, but the wing formula cannot be determined accurately for birds with wing moult, or worn primary remiges. I found that members of species-groups such as *E. franciscanus, nigroventris* and *orix* cannot be separated satisfactorily on wing formula, and species which are readily separable on this characteristic such as *E. orix* and *afer* are reliably identifiable by other features. I would welcome critical comment on the keys in this paper from ornithologists with field experience in East and West Africa.

Acknowledgements

I am grateful to M. LeCroy and R. W. Dickerman, American Museum of Natural History, P. Colston and A. Vale, British Museum (Natural History), J. Mendelsohn, Durban Natural Science Museum, C. J. Vernon, East London Museum, W. S. Lanyon, Field Museum of Natural History, M. Louette, Koninklijk Museum voor Midden-Afrika, K.-L. Schuchmann, Museum Alexander Koenig, R. L. Zusi, United States National Museum, H. Schifter, Vienna Natural History Museum, J. Komen, Windhoek Museum, and H. D. Jackson, Natural History Museum of Zimbabwe, for access to material in these collections and for other assistance. Funds were provided by the Council for Scientific and Industrial Research, the Southern African Ornithological Society, and Rhodes University.

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Conclusive evidence for the continuing existence of the Madagascar Serpent-eagle *Eutriorchis astur*

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Received 12 July 1991

The Madagascar Serpent-eagle *Eutriorchis astur* is one of the rarest birds of prey in the world. It is known from only eleven museum specimens (Ferguson-Lees *et al.* in press), the last of which were collected between 1928 and 1930 (Dee 1986). There have been several possible sight records in recent decades from Marojejy Reserve, in northeastern Madagascar. A Malagasy forestry official reported four or five sightings of a raptor that may have been the Madagascar Serpent-eagle in Marojejy between 1964 and 1977 (Collar & Stuart 1985). Sheldon & Duckworth (1990) have recently provided a detailed account of their observation of a Madagascar Serpent-eagle, which was made in 1988 in the Marojejy Reserve (14°21′S, 49°38′E) at 850–900 m.

Some uncertainty, however, is always likely to result from sight reports of the Madagascar Serpent-eagle due to its close similarity in size and plumage to the sympatric Henst's Goshawk *Accipiter henstii* (Langrand 1990). The similarity between the two species is so great that three museum specimens of the Madagascar Serpent-eagle were originally misidentified as Henst's Goshawk (Sheldon & Duckworth 1990).

During February and March 1990, the Madagascar Environmental Research Group (MERG) undertook a faunal survey of the Ambatovaky Special Reserve, with an eight member research team of Malagasy and British zoologists. On 23 February 1990, CJR found an almost fully decomposed body of a large raptor by a trail, and collected the skull (including lower jaw) and three primary feathers, for identification. It would have been possible to have collected the entire skeleton and most of the feathers, but sadly at the time of discovery the importance of this material was not known. The raptor was identified by P. R. Colston as *Eutriorchis astur*, and this was subsequently confirmed by G. S. Cowles, C. Edelstam, I. J. Ferguson-Lees, S. Goodman and D. Mead.

Specimen description

The skull (BM S/1991.11.1) measures 79 mm maximum length, maximum width 47 mm, maximum depth 34.5 mm. The rhamphotheca is missing, but otherwise the skull and lower jaw are entire. This is the only intact skull known for *Eutriorchis astur*. There are currently no skeletal specimens of this species (Wood & Schnell 1986).

The three feathers (BM 1991.2.1-3) are the 7th, 8th and 9th primary feathers from the left wing. These feathers are most likely to have come from an adult male (C. Edelstam). The barring pattern on the primary feathers of the Ambatovaky specimen matches the feathers of the *Eutriorchis astur* skin held at the Sub-department of Ornithology, British Museum (Natural History), Tring.

Locality information

The raptor remains were found in the Ambatovaky Special Reserve, Province of Toamasina (Tamatave), 16°51′S, 49°08′E, lying at the base of a tree in a moist low-lying area, next to the trail which runs between the villages of Iampirano and Ranomena II. The area was covered in primary rainforest, at an altitude of 650 m. The site is four days walk west from the closest road, which was at Soanierana Ivongo, Province of Toamasina (Tamatave). It is worth noting that the area where the *Eutriorchis astur* was found is in the heart of the eastern rainforest belt. Ambatovaky Special Reserve is one of the largest rainforest reserves, with an area of 60,050 ha (IUCN/UNEP/WWF 1987). The forest in the area where the specimen was found was almost completely intact, and human disturbance was limited to small clearings around the villages of Ranomena II and Iampirano. The trail was typically used by less than five people daily.

Discussion

It is impossible to be sure how the eagle died. The fact that it was found by a trail suggests it may have been killed by a local villager; large raptors are disliked in many villages because some species will steal young chickens. Catapults or slings are used throughout Madagascar to hunt birds (such as pigeons and couas). When discovered, the raptor's body was entire, and had not been disturbed by scavengers since most of the bones were still articulated. This is surprising since insectivorous mammals (tenricids) and carnivorous mammals (viverrids) were common in the area. This was the only bird skeleton found by CJR during more than 12 months fieldwork in rainforest during the course of five years. It would seem likely that vertebrate corpses are quickly scavenged under normal conditions.

The Madagascar Serpent-eagle is obviously difficult to detect. During the 8-week survey of Ambatovaky, with two ornithologists on the team, no living example of this species was seen. Seven other raptors were observed at Ambatovaky: *Polyboroides radiatus, Accipiter henstii, Accipiter francesii, Buteo brachypterus, Falco newtonii, Falco eleonorae* and *Falco concolor* (Thompson & Evans, in press). The Henst's Goshawk was not recorded at the site of the Madagascar Serpent-eagle, but in lower altitude rainforest at 350–450 m, 20 km further to the east.

Sheldon & Duckworth (1990) report that the Madagascar Serpent-Eagle is extremely elusive. Their single observation was made just 500 m from their camp in an area of forest which was intensively surveyed for 18 days. The eagle is reported to be a sub-canopy bird (Sheldon & Duckworth 1990), which makes observation difficult. It appears to be a strict rainforest specialist; all the locality records are from the eastern rainforest belt, from primary forest (or secondary forest at the edge of primary forest) (Dee 1986).

The Marojejy observation and the Ambatovaky specimen were both from areas of primary rainforest that have suffered minimal human disturbance. In 1930 a specimen was collected from Analamazaotra, near Périnet (Dee 1986). This area has subsequently been visited and surveyed by many biologists over the past 30 years, but there have been no further observations. However Périnet, and the surrounding area, has become increasingly exposed to human disturbance in the form of population growth, deforestation, mineral extraction, tourism and road traffic; and so it seems probable that the serpent-eagle has been lost from this area as human disturbance has increased.

Preserving the Madagascar Serpent-eagle is one of the biggest challenges to conservationists working in Madagascar. Being apparently dependent on large areas of undisturbed primary rainforest, it is probably one of the first faunal elements to be lost as a result of human disturbance. Its elusive nature will make it difficult to confirm its presence within protected areas, and almost impossible to monitor natural populations. Clearly the most effective conservation measure must be to protect extensive areas of primary rainforest within its known range (between the latitudes 15° and 19°S). Significant suitable forest does occur within protected reserves, such as Marojejy, Masoala, Ambatovaky, Zahamena, and Mantady, and conservation initiatives are now underway in most of these areas. But we do not know what impact the inevitable fragmentation of the rainforest belt will have on the remaining Madagascan Serpent-eagle populations, or the critical minimum size of reserve needed to protect populations in the long term. More survey work is urgently required.

Acknowledgements

We would like to thank the Direction des Eaux et Forêts, the Ministère de l'Enseignement Supérieur and the Ministère de la Recherche Scientifique et Technologique pour le Développement for their support and approval of the Ambatovaky MERG Expedition.

The following team members all contributed to the success of the expedition: T. Bardon, M. Evans, J. B. Ramanamanjato, A. Raselimanana, J. C. Razafimahaimodison, P. Thompson, A. Wilson. We would also like to thank O. Langrand, M. Nicoll, N. Quansah, F. Rakotondraparany and P. J. Stephenson for their help in Madagascar, and S. Goodman and T. Schulenberg for helpful comments on an earlier version of this manuscript.

The expedition was funded by the following sponsors whom we would like to thank: the Loke Wan Tho Memorial Trust, Fauna and Flora Preservation Society, International Council for Bird Preservation, Royal Geographical Society, The Conservation Foundation, Gilchrist Educational Trust, Elmgrant Trust, Percy Sladen Trust, British Ornithologists' Union, British Museum (Natural History), Aldeburgh, Leiston and Saxmundhan Lions Club, Rotary Club of Saxmundham and District and the A. S. Butler Trust.

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On the taxonomic status of *Phylloscopus affinis* and *Phylloscopus subaffinis*

by Per Alström & Urban Olsson

Received 27 July 1991

Phylloscopus affinis and *P. subaffinis* were originally described as separate species, although there is some confusion surrounding the latter. The former was described by Tickell (1833) under the name *Motacilla Offinis* (lapsus for *affinis*) and the latter by David & Oustalet (1877) under the name *Oreopneuste affinis* (later Ogilvie-Grant (1910) proposed the now valid name *P. subaffinis*). This view was maintained by Ticehurst (1938), Vaurie (1959) and Cheng (1987). However, some recent workers, Williamson (1967) and Watson (1986), have chosen to treat them as conspecific.

Phylloscopus affinis is found from Pakistan and Kashmir eastwards along the Himalayas to Yunnan province, China, and from there northwards to Qinghai province, China. *Phylloscopus subaffinis* breeds in China from Yunnan and Sichuan provinces eastwards to Fujian province. Accordingly, the two species are mostly allopatric, but their distributions

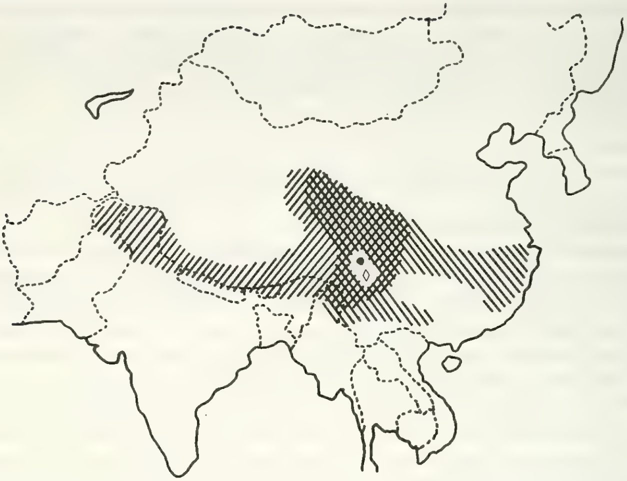


Figure 1. Map illustrating the distribution of *P. affinis* (western shaded area) and *P. subaffinis* (eastern area). The region of known overlap is shown. The locations of Wolong (●) and Emei Shan (◇) are indicated.

overlap in a large area in China, covering parts of Gansu, Sichuan and Yunnan provinces (Fig. 1).

Material and methods

Museum studies

The measurements of a sample of males and females of both species were taken in the American Museum of Natural History, New York, in the British Museum (Natural History), Tring, and in the Institute of Zoology, Academia Sinica, Beijing, China. The sexual classification was made according to the labels. Wing-length (maximum length), tail-length and bill-length (to skull) were measured, the two former with a precision to 0.5 mm, the latter to 0.1 mm.

In addition plumage characters were examined at four museums: British Museum (Natural History), Tring; American Museum of Natural History, New York; Institute of Zoology, Academia Sinica, Beijing, China; and Institute of Zoology, Academia Sinica, Kunming, China.

Field studies

Numerous individuals of both species have been observed, mainly during winter and spring/summer, *P. affinis* in Kashmir, Nepal and Xizang, Qinghai and Sichuan provinces, China, and *P. subaffinis* in Yunnan and Sichuan provinces, China, and northern Thailand. Five live individuals of *P. affinis* and four of *P. subaffinis* have been examined in the hand.

In June 1990 field observations were made and playback experiments carried out at two locations in Sichuan Province, China (Fig. 1). The first area, Wolong National Park (30°50′N, 102°55′E), is a rugged mountain region, with steep valleys between peaks reaching altitudes of up to 6250 m. Most of the observations were made at an altitude of approximately 3500 m, in the region around and immediately below the tree-limit. Both species occur sympatrically at this location; *Phylloscopus subaffinis* was also found at lower altitude.

The second location is the summit of Emei Shan (29°31′N, 103°20′E). The altitude here is *c.* 3000 m, which is lower than, or just at, the tree-limit. There are patches of spruce *Abies* spp. of varying size, broken up by large open areas covered with dwarf bamboo. Only *P. subaffinis* occurs here.

The recordings of songs and calls were made with a 'Telinga Pro' omnidirectional mono condensor microphone, ranging between 40–18,000 Hz, mounted at the focal point of a 58 cm parabolic reflector, and a Sony WM D6 cassette recorder, operating at standard speed. The same tapeplayer was used in the playback experiments together with a custom-made speaker, 'Telinga'. For each species a tape with a 2-minute segment of fairly continuous song, with the song strophes at natural intervals, was prepared, using recordings by P.A. from May 1987, *Phylloscopus affinis* from Qamdo, Xizang province (30°50′N, 97°20′E), and *P. subaffinis* from Emei Shan. Sonagrams were produced by Richard Ranft, British Library of Wildlife Sounds, London.

There are different ways to set up a playback experiment, depending on what species are involved or what questions one seeks an answer to. Catchpole (1973, 1977, 1978) and Weeden & Falls (1959) describe methods for different purposes. In this study, subjects, locations or time of day could not be chosen randomly. The two species were rather sparse and patchily distributed in the two test areas. Several individuals were exposed to the test situation, but some did not approach when their own species' song was played, or showed so little interest that no proper observations could be made. Only the test situations where a subject clearly reacted to its own species' song are included in this study.

We have chosen to use the method described below, whenever possible. In two of the described test situations (see Appendix 1), the songs were only played once. In the remainder the experiment was repeated.

When a singing male of either species was located, a loudspeaker was placed in a convenient place near the bird. One of us, operating the tape-player, placed himself 15–20 m away from the speaker. The other person was watching from the place with the best view of the speaker and its surroundings. When the bird was in view, the song of the other species was played for 2 minutes, and the bird's actions recorded. This was followed by a brief pause. Next the song of its own species was played for 2 minutes, and again the reaction was recorded. As a double check this whole procedure was in most cases repeated once more, after a short pause.

Two different times were measured: (1) the latency of response, i.e. the time from the start of a played song until the bird first approached the speaker; (2) the total time spent near the speaker. Catchpole (1973, 1977, 1978), who studied *Acrocephalus* warblers in reedbeds, used the time spent within 1 m of the speaker as a reference. This turned out not to be relevant in our study, since the habitat was less uniform. Our two species also showed a somewhat different behaviour when searching for the presumed intruder (see below), so the word 'near' has a slightly different meaning for each of them.

Results

Biometry

Males of both species have on average longer wings, tail and bill than their respective females (Table 1, Figs 2–4). A statistical comparison between the sexes within each species is shown in Table 2. Because of this sexual dimorphism, it is important to treat each sex separately, when comparing the two species (Table 3).

As *P. affinis* has relatively long wings and short tail, and *P. subaffinis* the other way round, the ratio between wing-length and tail-length seems to be the most useful biometrical value for identifying single specimens of these two species, but even here there is some overlap (Fig. 5). A Mann–Whitney U-test shows highly significant differences for both males, (Z(corrected for ties) = −6.797, $P=0.0001$; n(*affinis*) = 35, n(*subaffinis*) = 31) and females, (Z(corrected for ties) = −5.349, $P=0.0001$; n(*affinis*) = 24, n(*subaffinis*) = 25). As would be expected, differences in wing/tail ratio between males and females within each species are slight.

Phylloscopus subaffinis often shows a faint but still rather distinct emargination on the 4th primary (numbered descendently), whereas *P. affinis* shows at the most a trace of emargination on the 4th primary.

In the field, *P. affinis* appears slightly larger and looks more front-heavy, due to longer bill, larger bulk and proportionately shorter tail.

Plumage

The supercilium of *P. affinis* generally looks more prominent and, especially in front of the eye, better defined than in *P. subaffinis*; and it is on average somewhat longer. The colour is a cleaner, clearer yellow than in *P. subaffinis*. In *P. affinis* the supercilium often becomes paler, sometimes almost whitish, towards the rear, whereas in *P. subaffinis* the supercilium is generally more uniformly coloured. *Phylloscopus affinis* frequently shows a faint darker line above the supercilium; *P. subaffinis* rarely shows this. The eye-stripe is usually better defined and contrasts more clearly with the paler and more yellow ear-coverts in *P. affinis*. Normally *P. subaffinis* shows duskier ear-covers and as a result a more indistinct eye-stripe, but the eye-stripe may be quite well defined and similar to that of *P. affinis*. The underparts are more lemon yellow, less buffish, in *P. affinis* than in *P. subaffinis*. However, *P. affinis* often shows a distinct brownish hue to the breast and, particularly, the flanks, but even so the belly is more lemon-yellow than in *P. subaffinis*. The colour of the upperside is very similar in the two species and is of no importance for identification.

Bare parts

In *P. affinis* there is little or no dark at the tip of the lower mandible, whereas in *P. subaffinis* the tip is extensively dark. In long series of

TABLE 1

Mean values and standard deviations for three biometrical traits measured. The wing/tail ratio is the most useful value for classification

	Wing-length			Tail-length			Bill-length			Wing/tail ratio		
	n	Mean	s.d.	n	Mean	s.d.	n	Mean	s.d.	n	Mean	s.d.
P. affinis												
♂	35	59.3	2.20	35	44.4	2.92	33	12.5	0.62	35	1.34	0.060
♀	24	55.2	2.27	24	41.5	2.68	24	12.4	0.46	24	1.33	0.068
P. subaffinis												
♂	31	53.7	2.34	31	45.6	2.77	31	12.1	0.57	31	1.18	0.042
♀	25	51.2	1.64	25	43.8	1.74	24	12.0	0.52	25	1.17	0.048

TABLE 2

Males are on average larger than females in the three biometrical traits measured. In both species a nonparametric ranking test (Mann–Whitney U-test) shows significant differences in both wing-lengths and tail-length between males and females. The difference in bill-length is, however, slight and not significant

	n		Z	
	♂	♀	(corrected for ties)	*P*
P. affinis				
wing	35	24	−5.108	0.0001
tail	35	24	−3.413	0.0006
bill	33	24	−0.713	0.4759
P. subaffinis				
wing	31	25	−3.929	0.0001
tail	31	25	−2.557	0.0106
bill	31	24	−0.902	0.3668

TABLE 3

For both species the difference in wing length is highly significant, when each sex is compared separately (Mann–Whitney U-test). The difference in tail length, is significant only between females. While the tail is on average longer in *subaffinis*, *affinis* shows an on average significantly longer wing. This produces a visible difference in morphological structure between the two species

	n		Z	
	affinis	*subaffinis*	(corrected for ties)	*P*
♂ wing	35	31	−6.298	0.0001
tail	35	31	−1.501	0.1334
bill	33	31	−2.607	0.0091
♀ wing	24	25	−5.238	0.0001
tail	24	25	−3.351	0.0008
bill	24	24	−2.375	0.0175

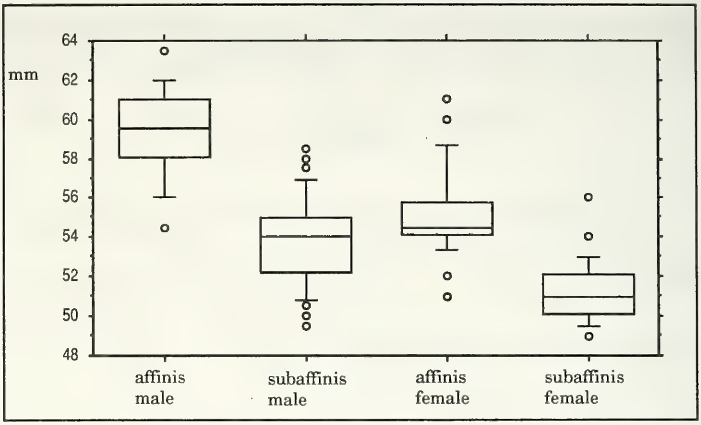


Figure 2. Box plots comparing wing-lengths between *P. affinis* and *P. subaffinis*. Males are shown to have significantly longer wings than their respective females. The necessity for sexing a sample is clearly shown if one compares male *subaffinis* with female *affinis*: in an unsexed sample there would appear to be a massive overlap. However, comparing each sex separately, *affinis* is clearly a longer-winged bird.

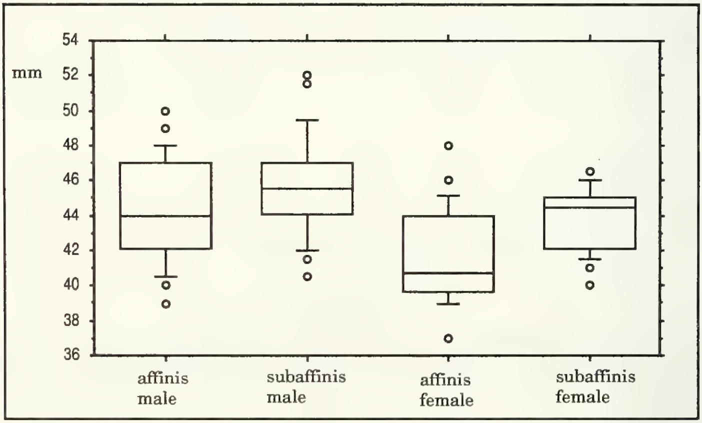


Figure 3. Box plots comparing tail-lengths between *P. affinis* and *P. subaffinis*. There is a great deal of overlap between the values. Although the differences are not significant between males, females of *subaffinis* have longer tails than female *affinis*.

specimens a slight overlap is apparent. The legs are on average somewhat paler in *P. affinis*, but can be identical in the two species.

Vocalizations

The song of *P. affinis* is a short, quick series of soft notes, almost invariably preceded by a call note: *chep-chi-chi-chi-chi-chi*. The speed

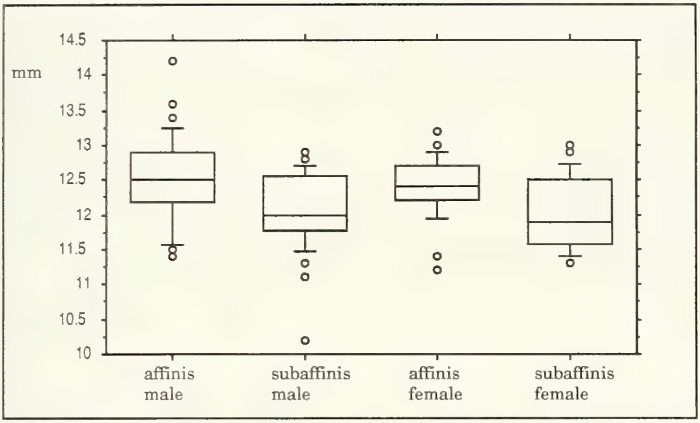


Figure 4. Box plots comparing bill-lengths between *P. affinis* and *P. subaffinis*. There appears to be no difference between the sexes. The apparent difference between the two species is significant only between males, when the sexes are compared separately.

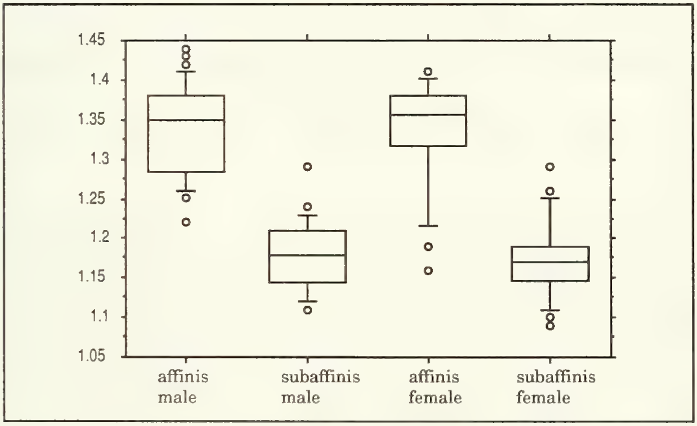
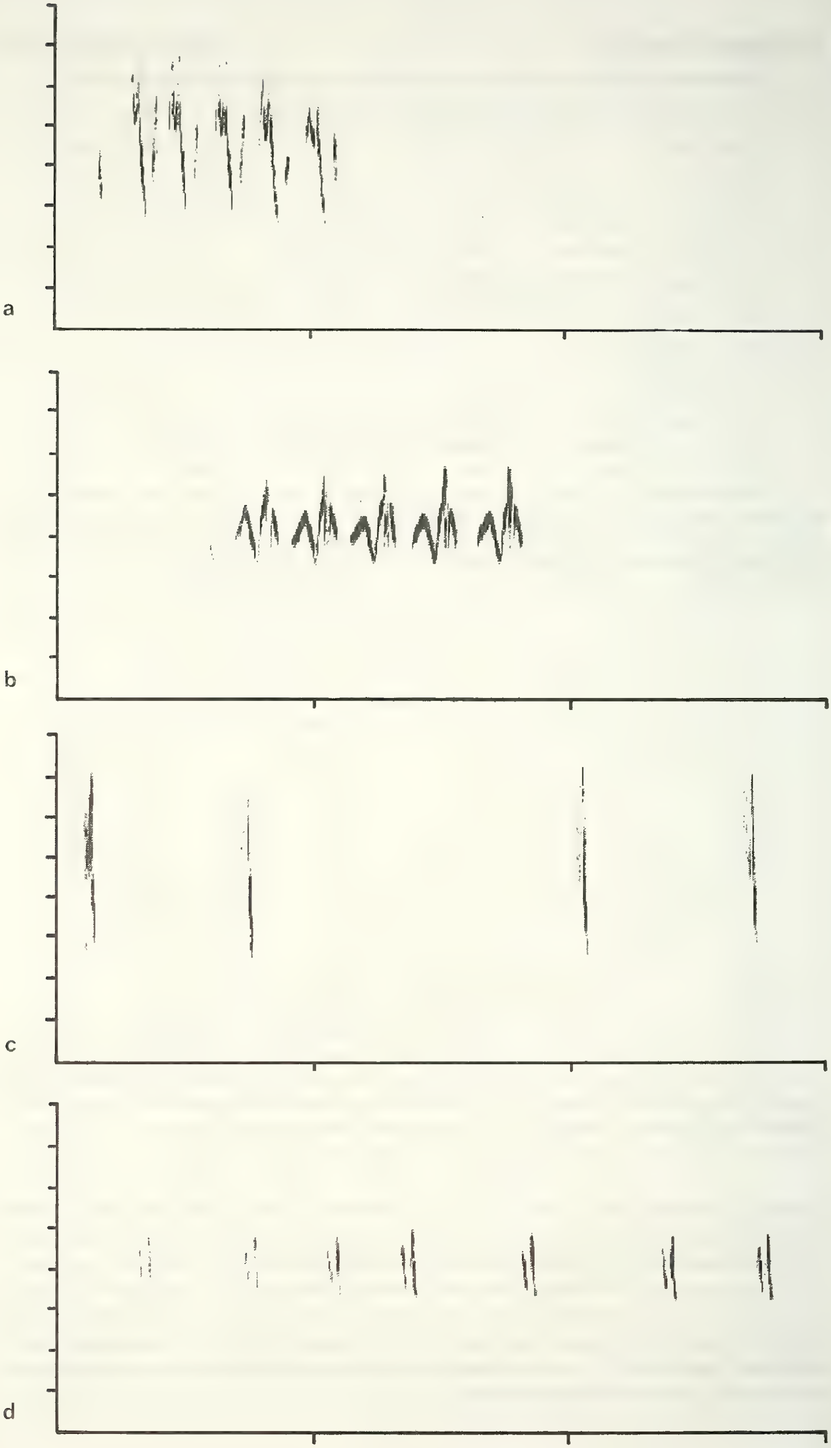


Figure 5. Box plot comparing wing/tail ratios between *P. affinis* and *P. subaffinis*. The longer-winged *affinis* has a significantly higher value than *subaffinis*, as the tails are of much th in the two species or even slightly longer in the latter.

varies to some extent, but is typically rather rapid; often the song has an almost explosive character. The number of *chi*-notes is also somewhat variable, normally 5–6, sometimes 8–10 (when fast) (Fig. 6a).

The song of *P. subaffinis* is clearly distinguishable from that of *P. affinis*. It is distinctly slower and weaker, and the voice is softer. Moreover, it does not begin with the *chep*, although sometimes with a short, subdued *trr* or *trr-trr*. A commonly heard phrase could be transcribed as *tuee-tuee-tuee-tuee-tuee* (Fig. 6b).


a
b
c
d

The call of *P. affinis* is a rather hard and sharp *chep* or *ch(r)ep* (Fig. 6c), somewhat reminiscent of one of the calls of a House Sparrow *Passer domesticus*.

The call of *P. subaffinis*, a soft, rather weak, *trrüp* or *trrip* (Fig. 6d), is easily separable from that of *P. affinis*, and resembles the House Cricket *Acheta domestica*.

For both song and calls, the differences are consistent. No individuals with any kind of intermediate vocalizations have been heard out of the 100+ of each species that have been observed. Furthermore, in all individuals that have been studied, attention was paid to vocalizations in relation to morphological characters. Not a single individual was observed in which the song and call were not positively correlated to the morphological differences described above.

Playback experiments

Two *P. affinis* and four *P. subaffinis* were exposed to playback song; of these, one *P. affinis* and three *P. subaffinis* were exposed to the complete test situation, with both songs repeated, and the remaining one of each species to the shorter version (see Appendix 1). With one exception, none of the individuals tested showed any interest in the other species' song. The exception was *P. affinis* individual no. 2 Wolong 900622, which dived towards the speaker when the first song strophe of the other species was heard, but then removed itself from the test area. We interpret this as an over-reaction following the strong stimulus of its own species' song being played for two minutes immediately before.

This material is too small to be tested statistically, but in view of the observed sympatry between the two species, it is strongly indicative.

Differences in behaviour

When searching for a presumed competitor the two species showed distinctly different behaviour. *Phylloscopus affinis* appeared to have a slightly higher tendency not to stay as close to the speaker. It more often flew over it, for rather long distances between nearby bushes, perhaps 1 or 2 m above the speaker, removing itself up to 10 m from the speaker before flying over it again. The time spent in the immediate vicinity of the speaker was thus somewhat less than for *P. subaffinis*, which approached the speaker with the wings lowered, quivering continuously. This latter behaviour was not seen in *P. affinis*. The birds then stayed mainly within 3 m of the speaker.

Figure 6. Sonagrams illustrating the differences in vocalizations between *P. affinis* and *P. subaffinis*. Made by Richard Ranft, British Library of Wildlife Sounds. Band width 369 Hz. Horizontal scale gives time in seconds, vertical scale gives kHz 0–8.

a *P. affinis* typical song. Recording by Per Alström, Qamdo, Tibet, early May 1987 (BLOWS no. 26125).

b *P. subaffinis* typical song. Recording by Per Alström, Emei Shan, Sichuan Province, China, mid-May 1987 (BLOWS no. 26127).

c *P. affinis* typical call. Recording by Per Alström, Qamdo, Tibet, early May 1987 (BLOWS no. 26126).

d *P. subaffinis* typical call. Recording by Per Alström, Wolong, Sichuan Province, China, May 1989 (BLOWS no. 26128).

Discussion

Habitat

Phylloscopus affinis usually breeds in open bushy areas at the upper tree-limit and in alpine scrub. It has been reported to breed between 3000 and 4880 m above sea-level (Schäfer 1938, Inskipp & Inskipp 1985, Meyer de Schauensee 1984). Ali & Ripley (1983) state that it breeds above 2700 m in Nepal.

Phylloscopus subaffinis breeds in scrub and at forest edge at high elevation, although normally lower than *P. affinis*. According to Etchécopar & Hüe (1978) it breeds between 3000 and 4000 m. Meyer de Schauensee, on the other hand, gives 915–3660 m, which is more in accordance with our own observations (*c.* 1900–3500 m).

The two species are mostly allopatric, but their distributions overlap in a large area in China, mainly along the edge of the Tibetan plateau. In the study area in Wolong, an area of sympatry, we found no differences in habitat preferences where they occurred together. *Phylloscopus subaffinis*, however, was distributed between altitudes of approximately 1900 and 3500 m, whereas *Phylloscopus affinis* was not seen below 3400 m during the breeding season.

Morphology

Williamson (1967) and Watson, in Mayr & Cottrell (1986), treat *P. subaffinis* as a subspecies of *P. affinis* because they claim to have seen specimens showing intermediate colouration on the upper- and underparts. They interpret this as morphological intergradation due to hybridization. Williamson lists specimens intermediate in this respect, taken mainly outside the breeding season in central China, Manipur and upper Burma. P.A. has examined 15 of the 17 specimens Williamson specifically refers to (see Appendix 2). These are all clearly either *P. affinis* or *P. subaffinis* and none appears to be intermediate (see Appendix 2). However, eight of these specimens were originally mislabelled. Eleven specimens from Gyi-Dzin-Shan are said to be "brown above, as in *subaffinis*, but while seven are characteristically deep buff beneath, four have some yellow admixture and in this respect recall *affinis*". P.A. has managed to find 10 of these specimens. Seven of them are clearly *subaffinis*, while the other three are *affinis*, which accounts for the difference in colour of underparts noted by Williamson (1967). Williamson further refers to three specimens from the Likiang and Talifu valleys, which are "brown enough above for *subaffinis*, but only two are deep buff beneath, one being much yellower". Two of these are indeed *subaffinis*, whereas one is clearly *affinis*, explaining the difference in underparts colour. A male from Kansu province 11 May and a female from Mekong valley, Yunnan province, 27 August are said to be "like *subaffinis* below but too greenish above". To P.A. these two specimens look like *affinis* in the colouration of the underparts, as well as in all other respects.

P. subaffinis arcanus was described by Ripley (1950), based on three specimens from Nepal in the non-breeding season. This form was recognized by Vaurie (1954), who wrote that "*arcanus* is a separable form, but its validity and status require further study". Williamson (1967) thought that the description of *arcanus* suggested an intergrade between *affinis* and *subaffinis*. Watson (1986), who examined the type of *arcanus*, agreed with Williamson that *arcanus* is intermediate and used this as an argument for treating *affinis* and *subaffinis* as conspecific. However, it appears that *arcanus* is in fact synonymous with *Cettia f. flavolivacea* (Alström, in prep.).

Since no single morphological feature appears to be diagnostic for distinguishing between the two species, one must consider a combination of morphological characters, such as colouration of underparts and supercilium, face pattern, bill pattern and structure. Taking all these characters into account, all individuals examined by us have fallen into two distinct groups. Indeterminable specimens are probably extremely rare, if they exist at all. As a rule, morphological differences between closely related species of *Phylloscopi* are slight, and the differences between *P. affinis* and *P. subaffinis* are not less than between, for example, Willow Warbler *P. trochilus* and Chiffchaff *P. collybita* (with the exception of the wing formula). To conclude, we cannot find any evidence of hybridization between *P. affinis* and *P. subaffinis*. On the contrary, the morphological data support the view that the two forms are stable, even in the area of sympatry.

Playback experiments

In our opinion vocal characteristics are as a rule more important in the genus *Phylloscopus* than are morphological features, in determining whether or not two forms belong to the same species. The consistent differences in vocalizations between the two species in this study are in themselves a strong indication against conspecificity and we regard it as highly unlikely that two morphologically different forms occurring sympatrically would show such consistent vocal differences if they were conspecific. The question is, of course, where the birds themselves draw the line.

In assessing the taxonomic status between two debated forms, we consider playback experiments to be one of the most powerful tools. An individual defending a territory can be expected to locate and attack all intruding singing competitors. In a large number of passerines, song constitutes the primary signal mechanism in species-recognition, when announcing a territory. Visual signals usually come in at a later stage, when an intruder is already present and located. In assuming the hypothesis that a male of species A would respond to the song of any other male of the same species entering its territory, one can test if the song of another individual is considered to belong to a competitor. As has been shown by others, interspecific competition may cause individuals of various species to respond to the song of members of other species or even families (e.g. Catchpole 1986, Reed 1982). Falls & Szijj (1959) found that two closely related species of meadow-larks *Sturnella* responded to each other's song, but only when they occupied adjacent territories. A similar study by Goldman (1973) of the reactions by Field Sparrows *Spizella pusilla* to the song of the Chipping Sparrow *S. passerina* revealed that the only individual that responded was one in a territory bordered by several Chipping Sparrow territories. Thus a positive response is in itself of little or no taxonomic value.

An individual that does not respond to a certain song, however, is likely not to consider the other singer a competitor. However, there may be various reasons for this not being valid evidence in taxonomy. (1) If the territory-defending individual is at a stage in the breeding cycle where competition is less detrimental to its own breeding success, it may not respond to a song that would have evoked such a response at a different stage in the breeding cycle. At some stages and, of course, outside the breeding season, most individuals will not be bothered by other individuals singing in the vicinity. (2) The singing individual may not yet have established a firm territory. The played-back song may then be interpreted as coming from the 'proper' territory holder and the singer might retreat without a fight. (3) If the song that is played was recorded near the territory of the tested bird, the territory-holding individual may recognize the song and react less persistently than to a song from a strange individual that it does not recognize (Weeden & Falls 1959). (4) In a single test of one individual, the location of the speaker in the territory may be important. The bird might defend peripheral parts of the territory less vigorously (Ickes & Ficken 1970). (5) Visual signals may be more important in announcing territory ownership. (6) Certain visual signals may be needed in combination with the song, in order to evoke the proper response.

To avoid the above-mentioned pitfalls the individuals tested were always exposed to their own species' song. The vigorous response displayed by the birds tested shows that they were in fact alert for intruders. Judging from the absence of response to the song of the opposite species, they do not seem to consider each other competitors. On at least two occasions both species have been attracted to the speaker at the same time. Each male reacted to its own species' song, and was able to see the other male. Despite this, no signs were observed of aggressive behaviour between them. All these facts, in combination, strongly indicate that *P. affinis* and *P. subaffinis* should be treated as separate species.

Summary

The taxonomic status of the two closely related species, *Phylloscopus affinis* and *P. subaffinis*, has been studied. These species have variously been treated as conspecific and as separate species. Studies of museum material show that, of the three morphological traits measured, there is a significant difference between the two species in wing-length, *affinis* having the longer wing. The tail-length is on average longer in *subaffinis*, which in combination with the wing-length produces an even more marked difference in proportions. No single plumage or bare-part feature is diagnostic, but the vast majority of specimens can be correctly classified into one of the two species by a combination of characters. There are consistent differences in both song and calls between the two species. No individuals with songs or calls in conflict with morphological features have been observed. In Wolong, an area of sympatry, the two species occur side by side, apparently without paying much attention to each other. Playback experiments indicate that the two species do not regard each other as competitors. All the individuals tested searched vigorously for the source of their own species' song, but in no case reacted significantly to the other species' song. During the search for the source of the song, they also behaved differently. *Phylloscopus subaffinis* moved about in the vegetation fairly close to the speaker, drooping and quivering its wings, while *P. affinis* was never seen to lower or quiver its wings. The two species have somewhat different habitat preferences, overlapping mainly in the region near the tree-limit. *Phylloscopus subaffinis* has its distribution mainly below the tree-limit, and *P. affinis* mainly at the highest forested levels and in the alpine zone above.

Acknowledgements

We are most grateful to professors Cheng Tso-hsin and Tan Yao-kuang at the Institute of Zoology, Academia Sinica, Beijing, who provided invaluable assistance. The sonagrams were prepared by Richard Ranft at the British Library of Wildlife Sounds. Peter R. Colston at the British Museum (Natural History), Tring, examined specimens and helped in locating references. Philip Angle of the U.S. National Museum of Natural History, Washington, kindly made specimens available. We are also grateful to the staff of the American Museum of Natural History, New York, and Mary Le Croy in particular, for their kind assistance. Raimo Neergaard and Matti Åhlund provided valuable assistance in the preparation of this manuscript. Ben King and Per Sundberg made many valuable suggestions for improvements.

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APPENDIX 1

Playback experiment data

Phylloscopus affinis
Individual no. 1 Wolong 900620

- 2 minutes song *P. subaffinis*. Was seen in the vicinity, when *P. subaffinis* individual no. 1 was tested (see below). Showed no reaction to the song of *P. subaffinis*.
- 2 minutes song *P. affinis*. Approached after a short while and continued to fly back and forth over the speaker as *P. subaffinis* moved away. Neither individual paid any attention to the other.

Individual no. 2 Wolong 900622

- 3 minutes song *P. affinis*. First approach after *c*. 60 seconds immediately diving towards the speaker. (1 minute was added to this test on the assumption that the delayed first approach was because the bird had been too distant at the beginning of the playback). Flew back and forth over the speaker for the remainder of the test. Both song and calls were given occasionally. Did not vibrate wings.
- 2 minutes song *P. subaffinis*. Dived towards the speaker when the first song strophe was heard after a short pause, then moved away.
- 2 minutes song *P. affinis*. First approach after 3 seconds, immediately diving towards the speaker. Then flew back and forth in the vicinity of the speaker.

Phylloscopus subaffinis
Individual no. 1 Wolong 900620

- 2 minutes song *P. subaffinis*. Approached after a short while and stayed close to the speaker. Held head and wings lowered and vibrated the wings. Both songs and calls were given occasionally.
- 2 minutes song *P. affinis*. Moved gradually away from the speaker. At the same time *P. affinis* approached. Neither individual paid any attention to the other. See *P. affinis* individual no. 1.

Individual no. 2 Emei Shan 900628

- 2 minutes song *P. affinis*. No reaction; continued singing in the vicinity.
- 2 minutes song *P. subaffinis*. First approach after 20 seconds. Flew back and forth near the speaker. Held head and wings lowered and vibrated the wings.
- 2 minutes song *P. affinis*. No reaction. Moved away somewhat from the speaker. Sang in the vicinity.
- 2 minutes song *P. subaffinis*. First approach 6 seconds. Flew back and forth near the speaker. Held head and wings lowered and vibrated the wings.

Individual no. 3 Emei Shan 900628

- 2 minutes song *P. affinis*. No reaction.
- 2 minutes song *P. subaffinis*. First approach after 10 seconds. Flew back and forth between bushes near the speaker. Held head and wings lowered and vibrated the wings.
- 2 minutes song *P. affinis*. Moved away from the speaker; then began singing in the vicinity.
- 2 minutes song *P. subaffinis*. First approach after 5 seconds. Flew back and forth between bushes near the speaker. Held head and wings lowered and vibrated the wings.

APPENDIX 1 *Continued*

Playback experiment data

Individual no. 4 Emei Shan 900629

- 2 minutes song *P. affinis*. No reaction.
- 2 minutes song *P. subaffinis*. First approach after 10 seconds. Flew back and forth between bushes near the speaker apparently searching for it. Held head and wings lowered and vibrated the wings.
- 2 minutes song *P. affinis*. No reaction. Started singing and moving about normally.
- 2 minutes song *P. subaffinis*. First approach after 5 seconds. Flew back and forth over the speaker between nearby bushes. Vibrated the wings.

APPENDIX 2

Specimens in the British Museum (Natural History) specifically referred to by Williamson (1967) as intermediate between *P. affinis* and *P. subaffinis*.

W = wing-length (maximum length); T = tail-length; W/T = wing/tail ratio; B = bill to skull (mm).

BM 1903.8.8.504 *P. subaffinis* (no species name on label). Gyi-Dzin-Shan, Yunnan province, China, March 1902. Collected by G. Rippon. W 49.5, T 42.0, W/T 1.18, B 11.5.

BM 1903.8.8.508. *P. subaffinis* (incorrectly labelled *P. affinis*). Gyi-Dzin-Shan, Yunnan province, China, March 1902. Collected by G. Rippon. W 56.5, T 48.5, W/T 1.17, B 11.6.

BM 1903.8.8.509 *P. subaffinis* (incorrectly labelled *P. affinis*). Gyi-Dzin-Shan, Yunnan province, China, March 1902. Collected by G. Rippon. W 54.5, T 44.5, W/T 1.23, B 11.2.

BM 1903.8.8.510. *P. subaffinis* (incorrectly labelled *P. affinis*). Gyi-Dzin-Shan, Yunnan province, China, March 1902. Collected by G. Rippon. W 55.0, T 48.0, W/T 1.15, B 11.9.

BM 1903.8.8.511. *P. subaffinis* (incorrectly labelled *P. affinis*). Gyi-Dzin-Shan, Yunnan province, China, March 1902. Collected by G. Rippon. W 50.0, T 44.5, W/T 1.12, B 11.4.

BM 1903.8.8.512. *P. affinis* (correctly labelled). Gyi-Dzin-Shan, Yunnan province, China, March 1902. Collected by G. Rippon. W 59.5, T 46.0, W/T 1.29, B 12.1.

BM 1903.8.8.513. *P. affinis* (correctly labelled). Gyi-Dzin-Shan, Yunnan province, China, March 1902. Collected by G. Rippon. W 55.5, T 39.5, W/T 1.41, B 12.5.

BM 1903.8.8.514. *P. subaffinis* (incorrectly labelled *P. affinis*). Gyi-Dzin-Shan, Yunnan province, China, March, 1902. Collected by G. Rippon. W 55.5, T 46.0, W/T 1.21, B 12.5.

BM 1903.8.8.515. *P. subaffinis* (incorrectly labelled *P. affinis*). Gyi-Dzin-Shan, Yunnan province, China, March 1902. Collected by G. Rippon. W 56.0, T 49.5, W/T 1.13, B 11.6.

BM 1903.8.8.516. *P. affinis* (correctly labelled). Gyi-Dzin-Shan, Yunnan province, China, March 1902. Collected by G. Rippon. W 53.5, T 39.0, W/T 1.37, B 12.4.

BM 1906.12.17.355. *P. subaffinis* (incorrectly labelled *P. affinis*). Lijiang & Talifu Valleys, Yunnan province, China, 14 April 1906. W 54.5, T 46.5, W/T 1.17, B 12.0.

BM 1906.12.17.356. *P. affinis* (correctly labelled). Lijiang & Talifu Valleys, Yunnan province, China, 14 April 1906. W 60.0, T 44.0, W/T 1.36, B 13.5.

BM 1906.12.17.357. *P. subaffinis* (incorrectly labelled *P. affinis*). Lijiang & Talifu Valleys, Yunnan province, China, 14 April 1906. W 53.5, T 43.5, W/T 1.23, B 11.9.

BM 1949. Whi. 1. 12290. *P. affinis* (correctly labelled). Male, Kansu province, China, 11 May. W 56.0, T 42.0, W/T 1.33, B 11.5.

BM 1922.12.7.298. *P. affinis* (correctly labelled). Female, Mekong valley, NW Yunnan province, China, 27 August. W 55.5, T 42.5, W/T 1.31, B 12.3.

Allocation of *Sturnus melanopterus* to *Acridotheres*

by Christopher J. Feare & Kang Nee

Received 29 July 1991

Sturnus melanopterus, commonly called the Black-winged Starling (Gruson 1976, Howard & Moore 1980, MacKinnon 1990, Walters 1980), is endemic to the Indonesian islands of Java and Bali, with some additional sightings on Lombok. Amadon (1943) placed *melanopterus* in *Sturnus* but its ecology and behaviour are poorly known and its relationships to other members of the starling family are unclear. In particular, Sieber (1978) suggested that it may be closely related to the endangered Bali Starling *Leucopsar rothschildi* and as the ranges of the two species now overlap he expressed concern that competition between them might impede the recovery of the Bali Starling. *melanopterus* has also been linked with the Black-collared Starling *S. nigricollis* in a genus *Gracupica* (Amadon 1943).

We studied a small introduced population of *Sturnus melanopterus* on St John's Island, Singapore, during a visit to that island on 27–29 November 1990. The aim was to gain basic information on its ecology and behaviour in order to throw light on its relationship with other family members. During this visit the island population comprised only seven individuals, six of which were clearly associating in pairs while the seventh bird was seen only once and appeared sick. Hails (1987) reported a population of about 50 birds: the reason for the decline is unclear although many may have been trapped to be sold as cage birds.

Habitat and feeding

In Java and Bali *Sturnus melanopterus* inhabits cultivated areas (de Wiljes 1957, Sieber 1978, Ash *in litt.*), fruit farms, fallow fields and open grass savannas (van Helvoordt *in litt.*) and grass lawns (MacKinnon 1990). In Singapore Hails (1987) considered it to be more arboreal than other mynas.

On St John's Island it was recorded feeding in three habitats, in trees, in grassland and on the beach. The birds fed singly, in pairs and on one occasion were seen feeding all together on the grass floor of open woodland. They frequently fed in association with Common Mynas *Acridotheres tristis*. In the morning and late afternoon they spent much time sitting and preening on a sea wall and one bird was seen to bathe in the sea. At dawn and dusk, they joined assemblies of Common and White-vented Mynas *A. javanicus* and Purple-backed Starlings *Sturnus sturninus*. Between about 1100 h and 1600 h the *S. melanopterus* could not be found and we presumed that they rested in trees out of sight.

In trees they ate nectar, fruit and insects. Nectar was taken from the small 'powder-puff' flowers of the Madras Thorn *Pithecellobium dulce*. Fruits taken were the small orange berries of *Fagraea fragrans* and larger, cherry-sized dark red fruits of *Eugenia longiflora*. In addition, one bird ate a green unripe fruit from a flower stem of a Madras Thorn tree. This bird also fed by picking small insects from leaves and by prying into ripe pods of this tree, presumably eating insects although they might have been eating the white pulp which Wee (1989) describes as edible. It found a 5 cm mantid, identified as *Parkierodula venosa*, in the tree, flew to the ground and dismembered the insect on a mud mound, eating all but the wings. On several occasions birds were seen probing into the bases of terminal rosettes of *Casuarina* leaves where they presumably ate small insects: in doing this the birds demonstrated some agility, clinging on to very fine twigs and reaching out to the terminal rosettes.

In grassland *S. melanopterus* pecked at items among the vegetation and made dashes at more mobile prey. In open woodland they were also seen probing into soil close to a termite mound. On the beach they pecked at small items on the sand above the water line, and chased insects among *Ipomoea* at the top of the beach. One bird made dashes at small items left by retreating waves.

In the open woodland, one bird drank from a tree hole, clinging woodpecker-fashion to the trunk, supporting itself with its tail.

Voice and pair-bonding behaviour

The calls of *S. melanopterus* were loud and varied, and were of the same quality and often very similar to those of *Acridotheres tristis* and *A. javanicus*. They included a repeated *cha cha cha*, each note with a downward inflection, a throaty *tok* or *chok*, a harsh *kaar kaar*, a harsh drawn-out *kreeer*, a frequently given disyllabic *kishaa kishaa* and other whistles and squawks. On several occasions a high-pitched whistling *tsoowit* or *tsoowee* flight-call was given by birds which had been resting or preening, while a feeding bird was once heard to give a harsh *kaar* alarm-call on take-off.

Feeding bouts were often interrupted by bursts of calling. These often consisted of loud repetitive disyllabic calls very similar to those of *A. tristis*. They were given by one member of the pair with crest slightly raised and in many cases the mate responded by duetting.

Tok calls were often accompanied by bobbing of the head with the short crest erected and the cheek feathers puffed out. During prolonged preening and resting bouts on the sea wall in the morning and evening, members of pairs periodically came together to within about 0.5 m of each other; one individual occasionally bowed its head by pointing the bill down towards the breast and at the same time bobbed its body up and down. Similar behaviour, but more exaggerated, was seen in a pre-roost assembly when two birds sat close to each other in a tree; here, one bird raised its crest and bowed so that the bill touched the breast feathers. On another occasion, one member of a pair sang in a coconut tree, frequently bowing with its crest feathers raised; at each bow the bill was pressed into the breast feathers and the whole body was bobbed. These bowings appeared to elicit little response from the other member of the pair. Immediately prior to roosting at dusk, one pair sat on a branch facing in the same direction and with their bodies touching; they touched bills briefly but did not allopreen, although this behaviour was reported in captive birds (Harrison 1963).

Discussion

S. melanopterus is a heavily built starling, similar in size and shape to *A. tristis*. Like most species that are ascribed to *Acridotheres*, but unlike typical *Sturnus* (e.g. *vulgaris, cineraceus*), *S. melanopterus* has yellow legs, a patch of bare orbital skin (in this case yellow), black wings with a prominent white patch and a black tail with white tips to the feathers, particularly pronounced on the outer rectrices. In flight it is round-winged, rather than pointed-winged as in *Sturnus*, and its flight is more hesitant and butterfly-like, rather than direct. In all of these respects, therefore, *melanopterus* more closely resembles *Acridotheres* than *Sturnus*.

Our observations on the behaviour of *melanopterus* confirm a close affinity to *Acridotheres*. To the inexperienced ear the calls are practically indistinguishable from *A. tristis*. Association in pairs even when not breeding is typical of *A. tristis* (Sengupta 1982) and *A. javanicus* (Kang 1989), and even when larger flocks do occur, pairs are apparent. On St John's Island *melanopterus* pairs were less cohesive than Kang (pers. obs.) has found in *tristis* and *javanicus*, but non-breeding *Sturnus* typically associate in flocks in which pairs are not distinguishable. Pair-bond maintenance displays involving various forms of bowing are characteristic of *A. tristis* (Sengupta 1982), *A. javanicus* and *A. cristatellus* (pers. obs.) but are not used by typical *Sturnus* (Feare 1984).

On morphological and behavioural grounds we conclude that *melanopterus* should be taken out of *Sturnus* and assigned to *Acridotheres*. Its most common English name of Black-winged Starling should be replaced and, since most *Acridotheres* mynas have black wings, an appropriate name is White-breasted Myna.

The taxonomy of *Acridotheres* is currently confused and needs revision, especially in relation to the specific status of *fuscus, javanicus, mahrattensis* and *grandis*. Behavioural studies of other south-east Asian *Sturnus* may well suggest closer affinities to *Acridotheres*, and *burmannicus*, a little-known endemic of Burma and Thailand with outward resemblance to *melanopterus*, warrants particular study but *contra* and *nigricollis* should also be included in such a review. Harrison (1963) reported the latter performing bowing displays.

Acknowledgements

The observations were made during a visit to Singapore to advise on problems caused by starlings and crows: C.J.F. is grateful to the Central Science Laboratory (MAFF) for this opportunity. Identifications of the mantid and *Eugenia* were by Prof. D. H. Murphy and Dr Hugh Tan, respectively, and Jeffrey Lee and Paul Sweet assisted with the observations.

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A new race of the Sand Martin *Riparia riparia* from Israel

by Hadoram Shirihai & Peter R. Colston

Received 6 August 1991

The Sand Martin *Riparia riparia* is the second most common hirundine migrating through Israel after the Swallow *Hirundo rustica*. It is abundant in spring and also common in autumn throughout the Rift Valley. At Eilat, large numbers have been recorded moving northwards during the spring, with peak days of more than 20,000 birds. The Sand Martin does not breed in Israel but isolated breeding populations are found in the neighbouring countries of Egypt and northern Syria.

Between 1984 and 1988, Merav Gellert and H.S. ringed more than 5000 Sand Martins in Eilat during consecutive seasons, chiefly in spring. During this study, many birds which were trapped and examined were assigned to the nominate race, *riparia*, by virtue of their plumage colouration and larger size (wing length >100 mm). Also examined were a few individuals which differed by their smaller size (wing length 92–105 mm), paler upperparts, and more diffuse breast-band. These birds were considered to match the Central Asian race, *diluta*. In addition to these, other small Sand Martins (wing length 87.5–98.6 mm) which were noticeably darker above were also trapped regulary in spring in quite large numbers (often >10 birds per day). Initially these birds were identified as the race *shelleyi* (Nile valley, Egypt and northern Sudan) as their measurements were compatible with those given in Vaurie (1959) and Cramp (1988). In order to check the identity of the subspecies to which these birds belong, H.S. brought three specimens to The Natural History Museum, Tring, for comparison with other material collected at the same time of year. It soon became apparent that these birds not only differed from *shelleyi* but were also obviously distinct from all other subspecies or populations found breeding in Asia, Eurasia and the Nearctic, i.e. nominate *riparia, ijimae, taczanowskii, tibetana, diluta, fokienensis* and *indica,* listed in Peters (1960), and represented in the skin collections at Tring. They differed in their combination of small size, darker upperparts, darker grey-brown breast-band, and brownish chin with distinct dark brownish speckling on the throat. In view of these obvious differences we propose the name

Riparia riparia eilata subsp. nov.

Type. Adult male. Eilat, Israel, 10 April 1990. Collected by Hadoram Shirihai. In the collection of The Natural History Museum (formerly British Museum (Natural History)), Tring; Reg. No. 1991.11.1.

Description (fresh plumage). Upperparts mainly dark earth-brown, with crown to mantle, upper scapulars, lesser and median coverts more sooty-brown; greater coverts, tertials, rump and upper tail-coverts somewhat duller and paler (latter two areas faintly edged greyish); remiges and rectrices blackish-brown; lores and feathering near gape dark grey-brown and paler than crown; forehead near bill base tinged buffish; ear-coverts and cheeks dark grey-brown; chin buffish-brown; throat feathers whitish with rather broad, brown tips (*c*. 1.0 mm wide), giving the appearance of a brownish throat. Remainder of underparts white with contrasting dark grey-brown breast-band and flanks; underwing-coverts and axillaries dusky grey-brown; bill, legs, and iris black.

Measurements (mm). Wing 95; tail 45; bill (from skull) 9; tarsus 10.

Comparison with other races. In size, *eilata* shows a wing (range 87.5–98.6 mm) comparable with the short-winged races *shelleyi* (Nile Valley & N. Sudan) and *indica* (N. India), which have wing ranges of 88–98 mm and 88–99 mm respectively. In fresh adult plumage (spring), *eilata* differs from *shelleyi* in being distinctly darker earth-brown above (ground colour as nominate *riparia* or slightly darker, and in tone more like the warmer sooty-brown *ijimae*) rather than light to medium greyish-brown. Both races show rather distinct and sharply defined breast-bands but *eilata* differs in having the chin buffish-brown with broad, dense brown spotting or mottling on the throat (*shelleyi* has these areas mainly whitish), and in this respect *eilata* is markedly different from all other races (freshly plumaged adults of other races only very rarely show any faint pale brown speckling on the tips of the throat feathers). The race *indica* is noticeably paler above than either *eilata* or *shelleyi* with more greyish suffusion to the upperparts and also shows a broader, more diffuse and paler breast-band. *Diluta* (central Asia, from lower Ural river to Mongolia) is very similar to *indica* in its overall colouration (or fractionally darker) with mouse-grey suffusion to the upperparts, and noticeably paler than either *eilata* or *shelleyi*. On measurement it averages larger than *eilata, indica* or *shelleyi* (see Table 1), but is smaller than nominate *riparia* (W. Palearctic & N. America, wing range 96–120 mm) or *ijimae* (S. E. Siberia & Japan, wing range 96–111 mm); also its breast-band is considerably wider than in *eilata* and the other races discussed above.

TABLE 1.
Measurements of adults (mm), sexes combined

	Wing			Tail			
	n	range	mean, or range of means	*n*	range	mean, or range of means	Source
riparia	>1,000	96–120	102.9–108	52	45–54	48·3–51	2,5
ijimae	>50	96–111	102–105	12	46–52	50	1,2
diluta	>50	95–108	101–102	13	42–56	49	1,3,5
indica	10	88–99	93.4	10	38–43	40.4	1
shelleyi	23	88–98	93–94.6	13	39–47	42.6–42.9	2,5
eilata	105	87.5–98.6	94	20	42–47	44	4

Sources: (1) Nat. Hist. Mus., Tring, (2) BWP 5, (3) Dementiev & Gladkov (1954), (4) ringed in Eilat, (5) Vaurie (1959).

Distribution, geographical variation, and remarks. The race *eilata* is a quite common spring migrant through Eilat, comprising *c.* 5% of birds on passage between February and June. From *c.* 2000 Sand Martins that were trapped in spring and examined in detail, 105 individuals showed the diagnositic characters of *eilata*. If this sample is unbiased, it indicates that several thousand migrants of this form pass through each spring. Birds showing *eilata* characters were ringed between 20 February and 24 April, peaking between 20 March and 6 April. Within this period recognizable waves occurred for a few days, with up to 13 individuals ringed in one morning.

The race *diluta* (comprising *c.* 20% of the species on spring migration) is recorded in Eilat between mid-March and mid-June, with the bulk arriving between the end of March and the first week of May, and peaking between 5 and 20 April. Nominate *riparia* (comprising 75% of the species on spring migration) passes through Eilat all spring (February–June), with the bulk occurring between the second week of April and the fourth week of May, and peaking between 23 April and 23 May.

Birds showing *eilata* features which were ringed in Eilat showed normal migratory behaviour, i.e. migrating northwards through the Arava valley with large mixed flocks of nominate *riparia* and *diluta*. The fact that individuals of *eilata* have a shorter wing length, and that their peak migration is earlier than nominate *riparia* and somewhat earlier than *diluta*, suggests the possibility of a southern breeding population perhaps from an isolated breeding area east of Israel, possibly in Syria or Iraq where some isolated populations are known to occur. However, we know of no museum material from these regions during the breeding season.

The migration of the Sand Martin through Eilat is more protracted in autumn and has been less intensively studied, but the few ringed birds that have been examined confirm that nominate *riparia* is the dominant subspecies passing through the area, while *diluta* is scarce. Smaller numbers probably of *eilata* have been trapped in autumn (including young birds), but these have not been as intensively examined as spring birds.

Geographical variation in the Sand Martin is predominately clinal (Vaurie 1959, Cramp 1988), with size becoming smaller and depth of ground colour paler towards the south, resulting in gradation and intermediate populations over a wide area between the northern, largest and darkest forms (nominate *riparia* and *ijimae*, occupying a wide zone in the Palearctic and Nearctic) and the southern, smallest and palest forms (*diluta, indica* and *shelleyi*, breeding in southern Asia and Egypt). Within this general pattern *eilata* stands out as the smallest and darkest form.

Acknowledgements

H. S. wishes to thank John and Carol Dowling for their hospitality and help in translation of an earlier draft during his studies at Tring. We also thank Duncan Brooks, John Dowling, Alan Harris, C. J. O. Harrison, C. S. Roselaar, and D. W. Snow, who confirmed our findings and made helpful comments; and finally the International Bird Watching Centre in Eilat for their help and support in the ringing studies over the years.

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Addresses: Hadoram Shirihai, P. O. Box 4168, Eilat 8102, Israel. Peter R. Colston, Bird Group, Department of Zoology, The Natural History Museum, Akeman St., Tring, Herts, HP23 6AP, UK.

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IN BRIEF

ON THE PRESENCE OF THE BLUE-FOOTED BOOBY *SULA NEBOUXII* ALONG THE SOUTH COAST OF PERU

The Blue-footed Booby *Sula nebouxii* has a restricted range along the Pacific coast of tropical America, between Mexico and northern Peru, with an outlying population on the Galapagos Islands. It favours semi-arid regions for breeding and is consequently largely absent from the very humid bight between northern Ecuador and Panama, including the whole of Pacific Colombia (Murphy 1936, *Oceanic Birds of South America*).

Some of the largest known breeding colonies lie off northern Peru, notably at the Lobos Islands off dep. Lambayeque (6°–7°S), but regular breeding occurs as far south as the Guañape Islands (8°30′S) off dep. La Libertad. In this region, at the northern end of the cool upwelling zone of the Peru (Humboldt) Current, it usually outnumbers the Peruvian Booby *Sula variegata*, a characteristic species of the upwelling zone, which becomes dominant south of 8°S.

Following many years of observations along the south coast of Peru, I have accumulated numerous records of *nebouxii*, which indicate a regular annual post-breeding dispersal of juveniles far to the south of the normal breeding range. At Mollendo, dep. Arequipa (17°S), the birds usually appear in late May or June, often mixed in flocks of the superabundant *variegata*, and are subsequently present until the following September or October. Numbers vary greatly from year to year, with sometimes no more than scattered singletons in a whole season, whereas in other years they may be seen in monospecific flocks of more than a dozen together. Exceptionally high counts were of 200+ in an hour off Mollendo, 28 June 1977, and 400–500 on and around islets at Morro Sama, dep. Tacna (18°S), 29 July 1984, almost within sight of the Peru–Chile border. This annual post-breeding dispersal of juveniles bears no apparent relation to the prevailing oceanic conditions and is a regular event involving varying numbers of birds.

In some years, when the coast is affected by the warm and nutrient-poor waters of *El Niño*, there is an influx of *nebouxii*, adults as well as immatures, into south Peruvian waters and in such anomalous years, such as 1983, the birds may be seen any time between January and May. During intense incursions of *El Niño* sporadic breeding has been reported from islands off central Peru, such as the Chinchas off dep. Ica (13°40′S) (Koepcke & Koepcke 1963, *Las Aves de Importancia Económica del Perú*), but not, insofar as is known, from farther south.

The presence of *Sula nebouxii* along the south coast of Peru would therefore appear to depend on two quite different circumstances: an annual post-breeding dispersal of juveniles irrespective of prevailing oceanic conditions, and occasional influxes of adults and immatures when the influences of *El Niño* are especially strong.

Casilla 62,
Mollendo,
Peru.

R. A. HUGHES

11 August 1991

We heard with regret that Mr Hughes died shortly after submitting this note—ED.

COURTSHIP FEEDING IN THE ORANGE-BREASTED FRUIT-EATER *PIPREOLA JUCUNDA*

The Andes of southern Colombia and Ecuador are the home of the Orange-breasted Fruit-eater *Pipreola jucunda*. Like other members of its genus, these birds are largely frugivorous, regularly taking a variety of fruits and occasionally feeding on insects. Little is known about the breeding of these montane forest cotingas, except that they generally live in pairs and both sexes attend the nest (Snow 1982, *The Cotingas*). Here I report what appears to be the only published account of courtship and breeding of *P. jucunda* in the wild.

On 31 July 1988, while watching a fruiting *Miconia* tree in subtropical montane forest at the La Planada reserve in southwestern Colombia, I noticed a female fruit-eater perching on a branch under the canopy of the tree. A few minutes later a male flew in and alighted on the same branch.

In his bill he held a large lauraceous fruit, which he offered to the female. After she had swallowed it, I witnessed a copulation that lasted a few seconds, after which the male flew away. Shortly after, the female started feeding on the *Miconia* fruits.

The following day I returned to the same fruiting tree. Soon a female, apparently the same individual, came in and perched on the same branch I had been watching the previous day. After about 20 minutes the male arrived, offered another fruit of the same kind as before to the female, then copulated with her. This time the female flew away first, to a tree about 10 m away, and disappeared among the mass of epiphytes growing over the trunk. Later that morning I saw the two birds fly to exactly the same place, 5 m above the ground on a large trunk thickly covered with epiphytes. The female was carrying moss, evidently to a nest, but I was unable to examine it closely because of the masses of epiphytes on the trunk.

As far as I know, this is the first definite report of courtship feeding of any of the cotingas in the wild. In captivity, Everitt (1963, *Avic. Mag.* 69: 141–144) and Lint & Dolan (1966, *Avic. Mag.* 72: 18–20) observed male fruit-eaters (*P. riefferii* and *P. jucunda*) feeding incubating females, and also (*P. jucunda*) before the eggs were laid. Skutch (1989, *Ibis* 131: 303–304) reported what was apparently courtship feeding in the Rufous Piha *Lipaugus unirufus*, but did not observe copulation. Snow (*loc. cit*) has evidence that courtship feeding perhaps occurs in the genus *Carpornis*, which is probably quite closely related to *Pipreola*.

I am grateful to Alexander F. Skutch, Barbara Snow and David W. Snow for encouraging me to write this note and for helpful comments on an earlier draft.

Reserva Natural La Planada,
Apartado 1562,
Pasto, Nariño,
Colombia.

CRISTIÁN SAMPER K.

30 September 1991

A RECORD OF GREAT KNOT *CALIDRIS TENUIROSTRIS* FROM MAURITIUS, INDIAN OCEAN

The largest concentration of waders on the Mascarene Islands, western Indian Ocean, occurs at Terre Rouge estuary, Mauritius (20°08'S, 57°30'E), a small (0.5 km^2), polluted, tidal mudflat close to Port Louis, the capital city. African Waterfowl Census counts at Terre Rouge in 1991–1992 revealed up to 1201 waterbirds of which about 80% were Curlew Sandpipers *Calidris ferruginea* (Perennou 1991; pers. obs.).

On 28 December 1990 I found a single Great Knot *Calidris tenuirostris* in a mixed flock of waders on the southern shore of Terre Rouge estuary. I watched it for one hour at ranges down to 20 m through a 25X telescope, and also photographed it. It was not seen on subsequent visits in January to March 1991.

Diagnostic features noted were as follows. Structurally it appeared to be a giant *Calidris*, but only one bird present was close in size: a Grey-tailed Tattler *Heteroscelus brevipes*, which had also been present in the 1989–1990 non-breeding season (details of the latter well-watched and photographed bird, found by P. A. R. Hockey, have not been published, although it is also new to the Mascarene Islands). The Great Knot was noted as similar sized but bulkier bodied, with a thick-based, tapering bill. Black breast spots over otherwise white underparts merged upwards into streaks, quite sharply cut off below next to the carpal joint but with a few dark flecks below this or continuing along the flanks. The crown was heavily streaked blackish. The mantle and scapulars were faded (lower scapulars warmer-coloured and almost pointed with wear), but still looked very dark and contrasted with the paler brown, more faded or washed-out wing coverts and tertials.

J. H. Marchant examined my photographs and description and agrees with the identification, commenting that the brownish tones to the plumage, worn scapulars and contrast on the wing indicate that the bird was in first non-breeding ('first winter') plumage.

Great Knots breed in northeastern Siberia and most spend the non-breeding season in Australia. The nearest known concentrations to Mauritius occur in Pakistan and the Arabian peninsula (Hayman *et al.* 1986, Perennou *et al.* 1990), but recent records in Morocco and north-western Europe (Anon. 1991) confirm the tendency to long-range vagrancy. The only previous records for the Afrotropical and Malagasy faunal regions have come from Seychelles but details have never been published (Marchant 1986, Turner & Dowsett 1988).

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Turner, D. A. & Dowsett, R. J. 1988. Additions and corrections to Afrotropical and Malagasy avifaunas. 1. Western Indian Ocean Islands. *Tauraco* 1: 130–138.

Forestry Quarters,
Tamarin,
Mauritius,
Indian Ocean

ROGER J. SAFFORD

16 December 1991

BOOKS RECEIVED

Johnsgard, P. A. 1991. *Bustards, Hemipodes, and Sandgrouse: birds of dry places.* pp. xi + 276, 51 coloured plates, 53 text-figures, 39 maps. Oxford University Press. ISBN 0 19 857698 6. £60.00. 28 × 22 cm.

An excellent, comprehensive and fully illustrated account of three bird families which are systematically far apart—though all of uncertain and much debated affinities—but ecologically related by all being characteristic and important elements of the avifaunas of arid parts of the Old World. The introductory chapters, occupying 64 pages, discuss their taxonomic history and phyletic relationships, zoogeography and evolutionary trends, behaviour and breeding biology (all very different, with social systems ranging from monogamy to polygyny, polyandry and promiscuity), and finally their conservation (the bustards in greatest danger, the other two families relatively unthreatened, in some cases actually favoured by increasing desertification). The greater part of the book consists of the species accounts. The treatment is both readable and scientifically rigorous, and fully referenced; and a good deal of unpublished information is incorporated, with acknowledgement, from other recent workers on these families.

An outstanding feature of the book is the collection of colour plates of all the species. All except one are from the huge collection of beautifully detailed water-colours by Major Henry Jones in the possession of the Zoological Society of London. The Lark-quail, the only one not by him, was specially painted by Mark Marcuson. There is a distribution map for every species, and a large number of text-figures mainly illustrating displays and other behaviour, and special features of plumage.

Jobling, J. A. 1991. *Dictionary of Scientific Bird Names.* Pp. xxix + 272. Oxford University Press. ISBN 0 19 854634 3. £19.95. 22 × 14 cm.

This is the first ornithological dictionary of its kind: it gives the derivations of all the currently valid generic and specific names of birds, with a selection of synonyms. The synonyms included are those that have been given generic or specific status by at least one of the authors listed in the bibliography (11 pages, including most recent regional standard works, but not the *magna opera* of Hartert and Vaurie for the Palaearctic, nor of Ridgway and Hellmayr for the Americas), or are of historical interest. A total of about 8500 names are listed. A 21-page introduction provides a clear and useful account of the rules of zoological nomenclature, and an analysis of the sources from which scientific names of birds have been drawn.

The treatment is scholarly. The more humdrum entries, which inevitably predominate—e.g. **manoensis** After the Mano district, German East Africa (Tanzania)—are interspersed with others that add to the enjoyment of browsing, for example: "**Masius** Bonaparte (1850), *Consp. gen. avium*, Vol. 1, p. 175, wrote of the Golden-winged Manakin *M. chrysopterus*, 'My genus is dedicated to Aloysius Masi, the very essence of Italy, exiled yet dear, talented, intellectual, energetic, and distinguished! Would that Italy or France could always produce such sons!' The only candidate for this eulogy (here freely translated from the original Latin) would seem to be the republican Colonel Masi, a supporter of Garibaldi, but no further details are provided."

Attractive drawings by Richard Fowling and the author decorate the text. Recommended to all ornithologists with even a passing interest in scientific names.

Bates, R. S. P. & Lowther, E. H. N. 1991. *Breeding Birds of Kashmir.* Pp. xxiii + 367, 5 coloured and 80 black-and-white plates. Oxford University Press/OUP India. ISBN 0 19 562562 5. £16.00. 22 × 14 cm.

A straight reprint (printed in New Delhi) of the valuable work published in 1952 and long out of print. Bates and Lowther provided a mass of new information on the nesting habits of birds in Kashmir, which must have been extended but is unlikely to have been superseded by later observations. Very good value for a modest price.

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Papers, from Club Members or non-members, should be sent to the Editor, Dr D. W. Snow, The Old Forge, Wingrave, Aylesbury, Bucks HP22 4PD, U.K., and must be offered solely to the *Bulletin*. They should be typed on one side of the paper, with **treble**-spacing and a wide margin, and submitted in duplicate. The style and lay-out should conform with usage in this or recent issues of the *Bulletin*. Informants of unpublished observations should be cited by initials and name only, e.g. ". . . of grass (C. Dieter)", but "P. Wee informs me that . . .". A limited number of photographic illustrations in black-and-white may be published annually at the Editor's discretion. Authors are requested to give their title, initials, name and full address at the end of the paper.

An author wishing to introduce a new name or describe a new form should append **nom., gen., sp.** or **subsp. nov.,** as appropriate, and set out the supporting evidence under the headings "Description", "Distribution", "Type", "Measurements of type" and "Material examined", plus any others needed.

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Correspondence about Club Meetings and on all other matters should go to the Hon. Secretary, Mrs A. M. Moore, 1 Uppingham Road, Oakham, Rutland LE15 6JB, U.K.

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The *Bulletin* is despatched from the printers on publication and is sent by Surface Saver Postal Services to all European destinations outside the U.K. and by Air Saver Postal Services to destinations outside Europe. Those whose subscriptions have not been received by the beginning of a month of publication will have their copies despatched by surface mail, after their current subscription has been paid.

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Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

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ISSN 0007–1595

Bulletin of the

British Ornithologists' Club

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Edited by
Dr D. W. SNOW

Volume 112 No. 3 September 1992

FORTHCOMING MEETINGS

Tuesday, 14 July 1992. Dr Storrs L. Olson, Curator in the Division of Birds at the Smithsonian Institution, Washington, since 1975, has an international reputation for his research in avian palaeontology. He will speak on **"Prehistoric Birdlife of the Hawaiian Islands".** This meeting has been specially arranged to take advantage of a visit to Europe by Dr Olson. We are very fortunate to have the opportunity of hearing him.

Those wishing to attend are asked to notify the Hon. Secretary by Tuesday, 1 July 1992.*

Tuesday, 28 July 1992. Dr Angela Turner, "The Hirundines: a most entertaining tribe of Birds". Dr Turner worked on the hirundines for her doctorate and is the author of the text of *A Handbook to the Swallows and Martins of the World*. She is presently Assistant Editor of *Animal Behaviour*.

*Those wishing to attend are asked to notify the Hon. Secretary by Tuesday, 14 July 1992.**

Tuesday, 15 September 1992. Dr W. and Dr U. Thiede, "Japan—Britain of the East?". Dr Walter Thiede, who gained his doctorate with a thesis on the distribution and taxonomy of the Redshank, has been a manager in the pharmaceutical industry for 26 years, 5 of which were spent in Japan. He is co-editor of *Ornithologische Mitteilungen*. Dr Ulrike Thiede is a zoologist and japanologist. She is a lecturer on Japanese affairs at the University of Düsseldorf. Both Dr Walter and Dr Ulrike Thiede have published books and papers on their subjects.

Those wishing to attend are asked to notify the Hon. Secretary by Tuesday, 1 September 1992.*

The celebration of the Centenary of the Club will be held in London after mid-October. Arrangements for the special dinner to mark the occasion cannot be completed until July and will be published in the September issue of the *Bulletin*. Members who are likely to attend the dinner must complete the slip enclosed in this issue. Details will be sent to them as soon as they are available.

Tuesday, 9 November 1992. Dr A. G. Gosler will speak on **"Bill adaptations in the Great Tit—or a mandible for all seasons".** Dr Gosler's address is based on work he began as a David Lack student in 1982. Since 1987 he has been a University Research Officer at the E.G.I. working mainly on the long-term population study of the Great Tit.

Meetings are held in the Senior Common Room, Sherfield Building, Imperial College, London SW7 at 6.15 pm. for 7 pm. A plan showing Imperial College will be sent to members on request.

*Late acceptances and cancellations can usually be taken up to the Thursday morning preceding a meeting, although members are asked to accept by 14 days beforehand as arrangements for meetings have to be confirmed with Imperial College well in advance.

If you accept and subsequently find you are unable to attend please notify the Hon. Secretary, 1 Uppingham Road, Oakham, Rutland LE15 6JB (tel. 0572 722788) as soon as possible as the booking can often be offered to another member.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 112 No. 3 Published: 28 September 1992

ANNUAL GENERAL MEETING

The Annual General Meeting of the British Ornithologists' Club was held at Imperial College, London, SW7 on Tuesday 17 May 1992 at 6 p.m. Mr R.E.F. Peal was in the Chair. 19 members were present. Apologies had been received from the Editor, who was overseas. At the invitation of the Committee Mr M. Reid, Auditor of the Accounts to 1991, was also present.

The Minutes of the Annual General Meeting held on 21 May 1991, which had been published (*Bull. Brit. Orn. Cl.* 111: 113–114), were approved and signed by the Chairman.

The Report of the Committee for 1991 and the Accounts for 1991 were presented. Mr Reid said he had been impressed by the strong balance sheet and he thought the Club has a firm financial base. It was proposed by the Honorary Secretary, seconded by the Honorary Treasurer that the Report and Accounts should be adopted. This motion was carried unanimously.

There being no additional nominations, the following were declared duly elected:

Honorary Treasurer:	Mr S.J. Farnsworth (re-elected)
Honorary Secretary:	Mrs A.M. Moore (re-elected)

The following resolutions, proposed by the Committee, were moved by the Vice-chairman and seconded by Cdr M.B. Casement, and passed unanimously:

That Richard Charles Price and Nigel John Crocker be appointed new Trustees of the Trust deed dated 24 September 1985 ("the 1985 Trust Deed") to fill the vacancies caused by the retirement of John Gordon Parker and David Reginald Calder;

And that approval be given by the Club to the alterations of the trust's powers and provisions contained in the 1985 Trust Deed contained in the document submitted to this meeting, which has been published in the Bulletin (*Bull. Brit. Orn. Cl.* 112: 3–5), with the following amendments made to the published text:-

Vol. 112, page 4. Delete lines 1–6 and substitute:

Whereas

(A) The freehold property known as 'Clovelly', 4 Beaconsfield Road, Tring, Hertfordshire ("the property") was vested in the Original Trustees under the trusts contained in the Trust Deed and it is intended that the proceeds of sale of the property shall form a fund which shall be known as "The Herbert Stevens Fund" which fund shall be held under the trusts of the Trust Deed as varied by this deed.

Vol. 112, page 4, line 38
delete "approves" and substitute "from time to time shall in advance approve".

No other business had been notified in accordance with Rule 12.

The meeting closed at 6.12 p.m.

The eight hundred and eighteenth meeting of the Club was held in the Ante-room, Sherfield Building, Imperial College, London, on Tuesday, 19 May 1992 at 6.15 p.m. 27 Members and 14 guests attended.

Members attending were: R.E.F. PEAL (*Chairman*), M.A. ADCOCK, Miss H. BAKER, Cdr M.K. BARRITT, RN, P.J. BELMAN, Mrs D.M. BRADLEY, D.R. CALDER, Cdr M.B. CASEMENT, RN Retd, Dr R.A. CHEKE, P.J. CONDER, S.J. FARNSWORTH, Rev. T.W. GLADWIN, D. GRIFFIN, C.A.R. HELM, Ms R-M. JONES, R.H. KETTLE, Dr J.F. MONK, A.G. MOORE, Mrs A.M. MOORE, R.G. MORGAN, Mrs M.N. MULLER, R.C. PRICE, Dr R. PRYS-JONES, Dr R. SELF, P.J. SELLAR, N.H.F. STONE, Dr D.H. THOMAS.

Guests attending were: Dr M. LOUETTE (*Speaker*), Mrs B. ADCOCK, Professor R. CHANDLER, Mrs F. FARNSWORTH, Ms K. HOFF, Dr M. GERMAIN, Mme C. GERMAIN, Mrs J.M. GLADWIN, P.J. MOORE, C.A. MULLER, Mrs E. PEAL, Mrs H. PRICE, R. RANFT, D. REID.

After supper the Chairman expressed the gratitude of the Club to David Calder and John Parker, the two retiring Trustees of the Stevens Bequest Fund. Then, as in the past two years, the Chairman gave his annual address which is published below.

Dr Michel Louette then spoke on "The Birds of the Comoro Islands". The four volcanic islands of the Comoros (which the speaker has visited five times since 1981) are situated 300 km from Madagascar and the same distance from the Mozambique coast. They hold about 60 breeding species and 40 species of migrants and vagrants.

There are 13 endemic species (including an endemic genus, *Humblotia*), probably the result of successive waves, the oldest one not from Madagascar. The archipelago also has endemic races of 23 other species, all shared with Madagascar; this group being the result of a wave of later arrivals, possibly favoured by stepping stones or general wind direction. The speciation process in the genera *Hypsipetes, Nesillas* and *Foudia* was discussed, and an overview was given of avifaunal composition, colonisation history, and possible threats; actions necessary for conversation were stressed. Competition by introduced species does not seem to be a problem yet, but hunting (especially for pigeons) is. Habitat loss (over-exploitation of the forest) will soon become a serious problem for the stenotopic forest birds, although analysis of habitat preference suggests some flexibility between different types of forest, but demonstrates the need for large trees. Some native birds are rare, and altitudinal stenotopy makes them vulnerable, e.g. the Karthala white-eye in the tree-heath on Mount Karthala, above 1750 m.

Migrant birds include a few land birds on the Madagascar-Africa route and especially waders from the Palaearctic, and also the Crabplover in some numbers. Being situated in warm nutrient-poor waters, the Comoros have only few marine birds, except for some terns on migration; there are some tropicbirds nesting but frigatebirds occur only as nonbreeding individuals; a few sulids may breed regularly.

The eight hundred and nineteenth meeting of the Club was held on Tuesday, 9 June 1992 at 6.15 p.m. in the same place. 24 Members and 12 guests attended.

Members attending were: D. GRIFFIN (*in the Chair*) B.S. MEADOWS (*Speaker*), M.A. ADCOCK, Miss H. BAKER, P.J. BELMAN, Mrs D. BRADLEY, Cdr M.B. CASEMENT, RN Retd, S.J. FARNSWORTH, A. GIBBS, Rev. T.W. GLADWIN, C.A.R. HELM, M.C. JENNINGS, R.H. KETTLE, Rev. G.K. MCCULLOCH, Dr C.F. MANN, D.J. MONTIER, A.G. MOORE, Mrs A.M. MOORE, R.G. MORGAN, Mrs M. MULLER, Dr R. PRYS-JONES, Dr R. SELF, P.J. SELLAR, Mrs E.F. WARR.

Guests attending were: Mrs B. ADCOCK, Mrs B. GIBBS, Mrs J. GLADWIN, Mrs S. GRIFFIN, K. HERBIER, Ms K. HOFF, P.J. MOORE, B. O'BRIEN, R. RANFT. Mrs I. MCCULLOCH, Mrs M. MONTIER, A.J. WARR.

After supper Mr Brian Meadows spoke on the birds of Central Hejaz, Western Arabia. He gave an interesting account, which was well illustrated, of the different habitats of that region, about which he has a wide and detailed knowledge.

The eight hundred and twentieth meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London, on Tuesday, 14 July 1992 at 6.15 p.m. 32 Members and 15 guests attended.

Members attending were: Mr R.E.F. Peal (*Chairman*), Dr S.L. Olson (*Speaker*), M.A. Adcock, Miss H. Baker, P.J. Belman, Mrs D. Bradley, D.R. Calder, P.J. Conder, G.S. Cowles, Dr C.T. Fisher, S.J. Farnsworth, Rev. T.W. Gladwin, D. Griffin, A. Gibbs, Mrs S.J. Farnsworth, Rev. T.W. Gladwin, D. Griffin, A. Gibbs, Mrs B.P. Hall, Ms R-M. Jones, Dr A. Knox, Rev. G.K. McCulloch, Dr C.F. Mann, Dr J.F. Monk, A.G. Moore, Mrs A.M. Moore, R.G. Morgan, Dr D.T. Parkin, Dr R. Self, R.E. Scott, Dr D.W. Snow, S.A.H. Statham, N.H.F. Stone, M.P. Walters, Mrs F.E. Warr, Dr D.R. Wells.

Guests attending were: Mrs B. Adcock, Mrs G. Bonham, Mrs J. Calder, Mrs F. Farnsworth, Mrs J. Gladwin, Ms K. Hoff, J. Hume, Mrs N. Liddell, Mrs I. McCulloch, Dr N. McCulloch, P.J. Moore, F. Sabesi, Mrs A. Scott, Mrs B. Snow, A.J. Warr.

Dr Storrs Olson gave the address "Prehistoric Birdlife of the Hawaiian Islands". He gave an account of the study carried out since 1970 which followed the fortuitous discovery of fossilised bones on a beach in Hawaii, and has revealed the existence of an extraordinary avifauna, including several large flightless forms, which was largely exterminated by the Polynesians who colonized the archipelago long before its 'discovery' by Captain Cook. His address was received with great interest and stimulated much discussion and many questions; and the meeting was only finally closed by lack of time.

THE CHAIRMAN'S ADDRESS

(given at the meeting of the Club on 19 May 1992)

HERBERT STEVENS

Last year I spoke on our two important benefactors (Peal 1991) and there is some further information which has come to light about Herbert Stevens.

I have examined the *Journal of the Bengal Natural History Society* in the period immediately after World War II to see if there were anything that could be linked to Stevens. It was a journal with neither lists of contents nor indexes, so the only way of tracing a writer or paper is by looking through it, page by page. I found in 1946 a critical review of "A List of the Birds of Darjeeling and Neighbourhood", which I recognized from drafts found in Stevens's papers. It proved to have much additional material, not in the surviving drafts, on birds there. After 11 pages it was continued—three issues later—and then again in the following issue. In that journal the author's name was sometimes printed at the head of the paper and sometimes at the foot. Stevens's name was not at the head of the paper in question nor was it at the foot either, although the use in it of the first person singular in a number of places shows that he intended his name to appear as the writer (see References: Stevens 1946–1947). However, by the time that the final part eventually went to press, the editor had presumably overlooked that it had not already been given. As a result, its authorship is recorded in the *Zoological Record* as "Anon".

W.S. Peckover has written to me pointing out that the two sketch maps printed within Stevens's "Narrative" of his travels in New Guinea in 1931–1932 (Stevens 1935 pp. 20,21) contain errors that have been followed by authors up to at least 1969. In the Stevens archive at the Hancock Museum at Newcastle upon Tyne there are some 50 maps which were found in his house after his death and two of them are of parts of New

Guinea. One is "British and German New Guinea", scale 1/2,000,000, War Office, August 1906, I.D.W.O. No. 1827, and it contains few of the names of places shown on the maps in Stevens (1935, pp. 20,21) and has the parallel 7°S in a different position to the second of those maps. The other is "Map of the Territory of Papua from the latest Surveys 1919, scale 30 miles to an inch". It does not purport to cover the Australian Mandated Territory, formerly German New Guinea, in which alone Stevens travelled. I am not aware of any writing by Stevens on them. It is clear that his 1935 paper had not been seen by him in proof before it was printed. It looks as if the faulty sketch maps had been produced, not by Stevens, either for some earlier work by another author or to illustrate another contemporary paper as well as that cited above.

Here I will mention that I have been given from the records in the Hancock Museum references to Field Museum publications in which Stevens is mentioned in connexion with collecting for that museum. These comprise a report of birds collected by Stevens on the Kelley-Roosevelts Asiatic Expedition 1928–1929 (Bangs 1932), and other references to Stevens on that expedition and on the C. Suydam Cutting Sikkim Expedition 1930–1931 (Field Museum of Natural History, Annual Reports of the Director for the years 1928–31, *Report Series* 7: 443–444; 8: 76–81, 183–184, 434–435; 9: 24, 98, 198).

Last year I had little information about Stevens's activities between December 1913, when he arrived back in the Darjeeling area from furlough in Europe, and January 1920. It appeared that Amy, whom he married, travelled at the latter time from England and I suggested that it was probably shortly afterwards that they married. In the last year I have been able to search the Bengal Marriage Registers and have traced their marriage. It was at the Wesleyan Church, Suddin Street, Calcutta on 13 November 1915, Herbert describing himself as Tea Planter, aged 35 and Amy being described as Spinster, aged 32, occupation unstated. Amy's address was "Calcutta Passenger in S S Manori [writing not clear, perhaps Manora]", so she was newly arrived. Herbert's address was "Gopaldhara, . . . Darjeeling" and Thacker's Indian Directory 1915 recorded him as Manager of Gopaldhara tea estate. The particular interest in the discovery of the date of his marriage is that, although the marriage was apparently a very happy one, there is no record of it in any of the papers of Stevens which have survived. Thus there is a very strong presumption that he had files covering 1914–1920 which have been lost at some time since he died and could have included natural history matters as well as personal papers. The ages in the marriage register did not correspond with those registered when they died, both being shown as older when they died than the ages at marriage suggest, Herbert by 2–4 years and Amy by 1–3 years. As both had names that were very common in the Birth Registers and their dates of birth are not important, I have not pursued this further.

THE CLUB

As I have pointed out earlier in more detail (Peal 1980), P.L. Sclater, the first Chairman of the Club, wrote in 1908 on its origins (Sclater 1909). He recorded that at the British Ornithologists' Union annual general meeting in 1892 a Committee was appointed to consider a proposal to establish an Ornithological Club to hold "monthly meetings at which papers shall be read and specimens exhibited", and that the proposal was entirely due to Bowdler Sharpe. I have wondered how the idea of constituting the Club might have originated and have considered two precedents that were known to Bowdler Sharpe (and to some, if not all, of the other four members of the Committee).

One precedent was the Zoological Club, which was founded in 1866. Membership was restricted to Fellows or Corresponding Members of the Zoological Society of London who regularly attended scientific meetings of the Society. The Club met approximately monthly from November to June. It was a dining club that met before or after the Society's meetings at which scientific matters were discussed and subsequently published, but scientific business was no part of the Club's meetings. Bowdler Sharpe was a member of that Club from 1892 to 1893 and had previously attended occasionally as a guest.

The other precedent known to me was the Nuttall Ornithological Club (Davis 1987). That was founded at Cambridge, Massachusetts, in 1873 to hold meetings every week at 8.00 p.m. and the reading of papers was the main business. The next year a proposal to publish a "Bulletin" was considered and publication began in 1876 with papers which had been read and approved for publication at meetings. In 1880 meetings were reduced to two a month from October to mid-June, and they were usually held in private houses until about 1887, from when they were held in the Brewster Museum. In 1883 the American Ornithologists' Union was formed and the Club discontinued the *Bulletin* but offered the A.O.U. the goodwill and subscription list, the A.O.U. continuing publication as "The Auk". In 1886 the Nuttall Club published as its first *Memoir* a paper read at a meeting which was too long for publication in *Auk*. Bowdler Sharpe was elected a Foreign Honorary Member of the Nuttall Club in 1878.

Next I will refer to the matter of Dr H. O. Forbes, quite an eminent zoologist and already a Club member by the time of its third meeting (December 1892), at which he spoke. The Club Committee Minute Book records that the Committee met on 13 February 1918 "to consider two resolutions brought forward by Dr H.O. Forbes". The first was that persons of alien enemy blood should be excluded from meetings of the Club and the second was that Lord Rothschild should be replaced as Chairman because he had voted for the non-expulsion of a member of alien enemy blood. (There is no record surviving of previous consideration of any proposed expulsion.)

The Committee, Lord Rothschild not being present, agreed that the first proposal was aimed solely at Hartert, who had become a naturalised British subject eight years before the war had begun and whose son had been killed in action in the British army, and should never have been put forward, and it vetoed the second proposal. A General Meeting held soon after supported the Committee unanimously—except for Dr Forbes. When, on 24 July that year, the Committee next met, it resolved "that the name of Mr [sic] H.O. Forbes be struck off the list of members". It was the only occasion on which a Club member has been expelled or asked to resign (other than for non-payment of subscription).

However Forbes was not restricting himself to fighting the Club Committee. At the British Ornithologists' Union annual general meeting on 13 March 1918 the B.O.U. Committee laid on the table letters exchanged between Forbes and some members of that Committee and reported that the whole tone of Forbes's letters had been most improper and unworthy of a member and called on him to apologize and withdraw or to resign (British Ornithologists' Union 1918). His name is not in the 1919 list of B.O.U. members.

To commemorate the centenary of the Club's inauguration this year two special publications will be issued this autumn. One is a book, *Birds, Discovery and Conservation*, containing excerpts from the *Bulletin* over the last hundred years, edited by Dr D.W. Snow and annotated by him and others with specialist knowledge of the relevant subjects. It will be published by Helm Information by arrangement with the Club. The other is a special volume of the *Bulletin*, entitled *Avian Systematics and Taxonomy*, edited by Dr J.F. Monk, consisting of invited papers by leading authorities.

The importance of the *Bulletin* over the years may well not be realized by members. I had recently a sample of 99 bird species, first described within the last 100 years and still generally recognized as valid species. This was random as regards the work in which the descriptions had been published and it is interesting that no fewer than 49 of them had been in the *Bulletin*. I imagine that a sample of new subspecies would show a similarly large proportion in the *Bulletin*.

I am most grateful to A.N. Tynan, the Curator of the Hancock Museum, Newcastle upon Tyne, and to Mrs F.E. Warr, of the Zoological Museum, Tring for the considerable assistance which they have given me. My thanks are also due to Unity McDonnell of the Zoological Club and to William E. Davis, Jr. of the Nuttall Ornithological Club for information about these Clubs.

RONALD E.F. PEAL

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Further notes on bird distribution in northeastern Dpto. Santa Cruz, Bolivia, with two species new to Bolivia

by Andrew W. Kratter, María Dolores Carreño, R. Terry Chesser, John P. O'Neill & T. Scott Sillett

Received 23 July 1991

We report here on the continuing inventory of birds of the Parque Nacional Noel Kempff Mercado (PNNKM) in the northeastern corner of the Dpto. Santa Cruz in eastern Bolivia. One month was spent conducting fieldwork in two forest sites south of sites in the park surveyed in earlier expeditions to PNNKM (Bates *et al.* 1989, 1992). This inventory is part of a continuing cooperative project between the Museum of Natural Science at Louisiana State University (LSUMNS), the Museo de Historia Natural "Noel Kempff Mercado" at the Universidad Autónoma "Gabriel Rene Moreno" in Santa Cruz, Bolivia (MHNNKM), and the PNNKM.

The two sites were in tall humid forest along the base of the Serranía de Huanchaca. The first camp, 86 km ESE of the village of Florida (14°50′ S, 60°25′ W), was near the terminus of a new extension of a logging road that skirts the base of the Serranía and now reaches the Brazilian border in the southeast corner of the park. We surveyed this site from 31 July to 21 August 1990. It was approximately 3 km south of the Serranía's base, along a small arroyo flowing off the Serranía. Other than the road itself and the felling of scattered mahogany trees, the area showed little disturbance. The high densities of Spider Monkeys *Ateles paniscus* and several species of large cracids (*Pipile pipile, Pipile cujubi, Mitu tuberosa* and *Penelope jacquacu*) attested to low hunting pressure. The forest canopy averaged 35 m, with emergent trees reaching 50 m. The area was gently rolling, with steeper terrain north and east of the site. A small boggy area (approximately 5 ha) was 200 m downstream from the camp. Rather sparse stands of bamboo (*Guadua* sp.) occurred along the arroyos in the area, and undergrowth was generally sparse, with little epiphytic vegetation away from streams.

From 22 to 27 August, we surveyed a second site 60 km ESE of Florida (14°42′ S, 60°39′ W), approximately 4 km west of the Serranía's base on gently rolling terrain. The canopy here averaged only 20–25 m, with thicker vine and undergrowth vegetation than the first site. Bamboo, much more extensive here, was concentrated in two major patches, each with dense bamboo growth up to 15 m high, which was somewhat disturbed by cutting for construction materials.

The PNNKM area is an important zoogeographic area, not only because the nearby Madeira/Guaporé river system forms the boundary for many species replacements within allopatric superspecies groups (Bates *et al.* 1989), but also because this is one of the southernmost areas of humid tropical forest in western Amazonia. The first camp was located in the closest humid forests in Bolivia that are continuous with the endemic-rich humid forests of Mato Grosso and Rondônia, Brazil. Several Rondônian endemics have been recently discovered in the PNNKM, indicating that some of these species cross the river barriers, probably in the headwaters where the rivers become narrower (Bates *et al.* 1989). The occurrence of bamboo is also of interest, because this habitat often harbours unique avian communities (Parker 1982, Parker *et al.* in press).

Apparently, there are at least two intra-generic species replacements between forest sites at the first site and those that have been surveyed further north in PNNKM (El Encanto, Los Fierros, and sites on the Huanchaca plateau: Bates *et al.* 1989, 1992): *Thamnomanes caesius* and *Sclerurus albigularis* at our first camp replace *T. saturninus* and *S. rufigularis* at the northern sites, respectively. Unfortunately, not one of these species was recorded at the second camp, which is geographically intermediate between the first camp and Los Fierros and El Encanto. However, neither of these species pairs may form a superspecies: *T. schistogynus* is the presumed allospecies of *T. caesius* (Meyer de Schauensee 1966), and species relationships within *Sclerurus* are uncertain. However, for 17 intensively sampled localities in northeastern Peru (specimen data from LSUMNS), another area of overlap for both species pairs, neither *T. caesius* and *T. saturninus* nor *S. albigularis* and *S. rufigularis* were collected at the same site, suggesting ecological replacement.

Several bamboo specialist species (e.g. *Celeus spectabilis, Simoxenops ucayalae, Automolus melanopezus, Cymbilaimus sanctaemariae* and *Cercomacra manu*) that have been recorded in similar bamboo in humid lowland forest from Dpto. Pando, Bolivia (Parker & Remsen 1987) to northern Mato Grosso, Brazil (Parker *et al.* in press), were not recorded in the bamboo groves in the PNNKM. Their absence might be explained by the small size of the stands or by the expected decrease of richness of forest birds at the periphery of the Amazon Basin. A number of forest species common further north (e.g. Dpto. Beni) are also missing without obvious ecological replacement in the PNNKM (e.g. *Eubucco richardsoni, Deconychura longicauda, Ancistrops strigilatus, Automolus infuscatus,* several *Philydor* spp. and *Terenura humeralis*).

We recorded two species not previously recorded from Bolivia and five species not previously known from Dpto. Santa Cruz; also collected were the first Bolivian specimens of *Capito dayi*. The following accounts give details for a presumed hybrid *Celeus*, as well as the new records for Bolivia and Dpto. Santa Cruz; details are also given for records of some poorly known species, especially those found in bamboo. All specimens are housed at the LSUMNS and the MHNNKM. Several hours of tape recordings made by AWK and JPO are housed at the Library of Natural Sounds (LNS), Laboratory of Ornithology, Cornell University.

RUFOUS-NECKED PUFFBIRD *Malacoptila rufa*

This species was uncommon in the undergrowth at the first camp, where three birds were netted. A fourth specimen, collected by RTC on the rim of the Serranía, about a 3-hour walk to the north of the first camp, was perched 2 m up in rather low open forest. These are the first Bolivian records of this widespread but poorly known species of central Amazonia. Our specimens are most similar to *M. r. rufa*, the western Amazonian subspecies, but tend toward the southern subspecies *M.r. brunnescens* in a few characters. Like *brunnescens*, the Huanchaca specimens have browner, less rufescent, backs and the lores are lighter buff. However, the underparts are more similar to those of *rufa*, as is the crown streaking, but this character is slightly more distinct on the Huanchaca specimens than on *rufa* specimens from Peru (LSUMNS specimens). In these respects, our specimens are very similar to the descriptions of specimens of *M. rufa* by Zimmer (1931) from both banks of the upper Río Madeira and the left (west) bank of the lower portion of this river. Zimmer considered these specimens closest to *M. r. rufa*, but with some intermediate characters.

BLACK-GIRDLED BARBET *Capito dayi*

This species was uncommon in the canopy at the first camp. A female was collected by A. Yépez, and a pair was collected by TSS in tall humid forest at the first camp. The pair was foraging approximately 40 m up in a fruiting fig (*Ficus* sp.); another pair was observed likewise, feeding in the upper canopy of an emergent fig. The only previous Bolivian record of this species was a tape recording from El Encanto in the PNNKM, about 38 km northwest of this site (Bates *et al.* 1989). This species, largely restricted to the Rondônia Centre of endemism (Cracraft 1985), is replaced farther west in Bolivia (Dptos. Santa Cruz, La Paz, Cochabamba, and Pando) by *C. niger*.

Celeus lugubris × *C. elegans* hybrid

An adult female with characteristics intermediate between these two members of the *C. elegans* superspecies was netted in bamboo along the arroyo of the first site on 8 August. Three presumed hybrids between these species have been described from nearby Mato Grosso, Brazil (Short 1972). The specimen collected in the PNNKM is intermediate between *lugubris* and *elegans* in the following characteristics (measurements for *elegans* and *lugubris* from Short 1972): the entire forecrown and upper crown is chestnut like *elegans* (but somewhat lighter), but the rear feathers of the crest are long (*c.* 35 mm as compared to <25 mm for *elegans*) and blonde as in *lugubris*; the throat is chestnut like *elegans*, but a few blonde feathers, as in *lugubris*, are interspersed; the pale bars on the back are thin but distinct (hybrid, 1.75 mm wide; *lugubris*, 2.64 mm; *elegans*, ± solid chestnut), and the dark bars of the secondaries are thick and spread completely across the feathers (hybrid, 7.5 mm wide; *lugubris*, 2.81 mm, *elegans*, completely dark). The wing length is intermediate between the two species (hybrid, 148 mm; *lugubris*, range 138–146 mm, mean 141 mm; *elegans*, range 153–161 mm, mean 156.3 mm). The tail and culmen lengths are within the range of *elegans*. The sixth (outer) rectrices of our bird are both rufous, but have asymmetrical barring. The left rectrix has a complete basal bar and four partial black bars, and the upper bars are incomplete across the rachis. In contrast, the right outer rectrix has four blacks spots on the feather's edge, and is completely rufous adjacent to the rachis. Although there is some overlap in this character, most *elegans* have rufous outer rectrices with black bases, whereas the rufous outer rectrices of *lugubris* are either fully or partially barred black (Short 1972).

The hybrid described herein is most similar to the male described by Short. The head colour of the two female hybrids from Mato Grosso is buffy, whereas ours is brown-chestnut, with flecks of blonde in the throat; the male hybrid has a head pattern similar to our bird, but the crest feathers are shorter (*c*. 30 mm) and the blonde is more extensive in the forecrown. Both female hybrids from Mato Grosso have superficially solid rufous secondaries, and only slight barring on the inner webs, whereas our bird has all secondaries fully barred with chestnut. The male hybrid from Mato Grosso has the inner secondaries half barred and the outer secondaries fully barred. The black barring of all hybrids described by Short is rufous, whereas our specimen has pale yellow barring. The outer rectrices of our bird are similar to the male hybrid described by Short. The intermediate wing length in our specimen is also similar to these birds.

The locality of the Huanchaca hybrid may be only 50 km northwest of the collection site of two of the Mato Grosso birds, where several "normal" *C. lugubris* were also collected (Short 1972). Apparently *elegans* and *lugubris* meet in the ecotone between dry chaco woodland and humid Amazonian forests. Humid forests in the vicinity of the first camp are limited to a narrow band (10 to 20 km wide) along the base of the Serranía de Huanchaca; thus the location should be in the vicinity of expected sympatry, even though the specimen was collected well within humid forest. *C. elegans* that were presumed to be pure have been seen in humid forests in the PNNKM (Theodore A. Parker III in 1989, and several by TSS, JPO and RTC in 1990), but no specimens have been collected. *C. lugubris* has been collected in drier forests approximately 420 km west of the park at San Juan in Dpto. Beni (Olrog 1963) and approximately 375 km southwest in Dpto. Santa Cruz (near Río Quizer, LSUMNS), but is unknown from the PNNKM. At the Beni site, Olrog (1963) also collected a specimen that he published as *Celeus "roosevelti"*. This "species," known only from the type from Mato Grosso, was later determined by Short (1972) to probably represent a *C. elegans* × *lugubris* hybrid. Therefore, it is quite possible that Olrog's specimen represents another *C. elegans* × *lugubris* hybrid.

GREY-THROATED LEAFSCRAPER *Sclerurus albigularis*

This species was fairly common in the low undergrowth at the first site, where it was recorded almost daily and six were collected. It has been recorded farther west in the Dpto. Santa Cruz (Remsen *et al.* 1986), but had not been previously recorded in the PNNKM. This record is of biogeographical interest because the Amazonian distribution of the species was thought to be restricted to the Andean foothills in the Upper Tropical and Lower Subtropical Zones (Meyer de Schauensee 1966). Our record, at the hilly base of the Serranía Huanchaca, extends the distribution 350 km east across apparently unsuitable lowland habitats. Other species in the PNNKM, including *Hirundinea ferruginea, Tangara cyanicollis, Basileuterus culicivorus* and *Carduelis olivacea*, show a similar disjunction (Bates *et al.* 1992). *S. albigularis* appears to be replaced in the northern portion of PNNKM (Los Fierros and on the plateau) by *S. rufigularis* (Bates *et al.* 1989; J. M. Bates, pers. comm.). In Peru, *S. albigularis* and *S. rufigularis* tend to segregate elevationally: *S. albigularis* is a foothill species, whereas *S. rufigularis* is a lowland species (Parker *et al.* 1982).

Our specimens, possibly representing a new subspecies, differ from described subspecies of *S. albigularis* in a number of characters: the breast and belly are greyer than other subspecies; the upper breast and back are less rufescent; and the rump is concolor with the brownish back (only the upper tail converts are rufous). Mensural characters in our specimens ($n=7$) also differ significantly from the nearest subspecies (*S. a. albicollis* from Bolivia, $n=7$, and *S. a. zamorae* from lowland Peru, $n=9$; specimens from LSUMNS). The bill is shorter than *albicollis* (ANOVA: Scheffe's $F=5.869$, $P<0.01$). The wing chord is shorter than *zamorae* (Scheffe's $F=5.016$, $P<0.01$). The tail is shorter than both *albicollis* (Scheffe's $F=3.131$, $P<0.05$) and *zamorae* (Scheffe's $F=8.589$, $P<0.001$), and the tarsi are shorter than both *albicollis* (Scheffe's $F=13.507$, $P<0.001$) and *zamorae* (Scheffe's $F=11.479$, $P<0.001$). At the species level, the white throat with a grey lower border, rufous breast band, brownish back and rufous upper-tail coverts indicate that our specimens are *S. albigularis*.

FASCIATED ANTSHRIKE *Cymbilaimus lineatus*

This species was uncommon in the subcanopy at the first camp, where a male was collected by AWK in the viney subcanopy of humid forest. Other individuals were occasionally seen and heard, often associated with *Herpsilochmus rufimarginatus*, *Cercomacra cinerascens* and other subcanopy birds. The antshrikes foraged exclusively in vines and denser foliage. Although these are the first records of this Amazonian species for the Dpto. Santa Cruz, there are other records from southern Amazonia from northwestern Mato Grosso in Brazil (Cardoso da Silva & Oniki 1988).

CINEREOUS ANTSHRIKE *Thamnomanes caesius*

This widely distributed Amazonian species was a fairly common member of understorey mixed-species flocks at the first camp, where heard daily; five were collected. These are the first records for Bolivia. *Thamnomanes caesius* is apparently replaced by *T. saturninus* in similar humid forests in the northern part of the park (Los Fierros, El Encanto, camps on the Huanchaca plateau; Bates *et al.* 1989, 1992), as close as 38 km northwest of the first camp. This species ranges across central Amazonia, a distribution somewhat similar to that of *Malacoptila rufa*. *T. schistogynus*, the presumed allospecies of *T. caesius* (Meyer de Schauensee 1966), occurs along the Andean foothills, 500 km west of the Serranía Huanchaca in Dpto. Cochabamba. The Andean foothill/Serranía Huanchaca distribution in *Thamnomanes* is shared by other pairs of closely related taxa, such as *Capito niger*/*C. dayi* and *Sclerurus albigularis albicollis S.a.* ssp. nov.? (see above). Separating these pairs is the Río Mamoré/Río Grande drainage, a major river system in southwest Amazonia.

STRIATED ANTBIRD *Drymophila devillei*

This bamboo specialist was rare at the second camp. A juvenile female was collected from the vicinity of the second site by Tristan J. Davis during the 1989 LSUMNS/MHNNKM expedition. A singing male was collected in 1990 by JPO in bamboo at the second camp, and a second bird was heard singing in another bamboo patch. These specimens are most similar to descriptions of the subspecies *D. d. subochracea*, known only from the type specimen from central Brazil and recent specimens from Río Arapuana, Mato Grosso (Novaes 1976). There have also been recent sight records of *D. d. subochracea* from Alta Floresta, Mato Grosso (Parker *et al.* in press). Although much of the forest avifauna of PNNKM has close affinities with that of Rondônia, Brazil (Bates *et al.* 1989), it is the more southern and eastern *D. d. subochracea* that is found in the PNNKM and not the nominate white-bellied race, which is found in Rondônia and Dpto. Pando (Parker *et al.* in press).

DUSKY-TAILED FLYCATCHER *Ramphotrigon fuscicauda*

This species was uncommon at both sites, but was much more frequently found at the second site. One bird was collected at the first site, and four at the second site. This species is often associated with bamboo (Parker 1984), and so it is not surprising that it has not been recorded from the other forest sites inventoried in the PNNKM, none of which have significant stands of bamboo (Bates *et al.* 1989, 1992). This little-known bird was previously recorded in Bolivia only from Dptos. La Paz and Pando (Remsen & Traylor 1989). Our records, the first for Dpto. Santa Cruz, extend the range of the species 700 km to the southeast, although it has been recently recorded to the northeast of Alta Floresta, Mato Grosso (Parker *et al.* in press).

LARGE-HEADED FLYCATCHER *Ramphotrigon megacephala*

This species is even more restricted to bamboo than is *R. fuscicauda* (Parker 1984). Specimens were netted in bamboo understorey at the first ($n=1$) and second sites ($n=5$). It was more common than *R. fuscicauda* at both camps (see above), but like that species, *R. megacephala* was also restricted to bamboo groves. The mournful, two-note, descending song of this species was frequently heard in the early morning. Individuals made short sally strikes to bamboo leaves from midlevel (3–6 m) perches in bamboo groves. The species had been recorded from lowland bamboo in western Dpto. Santa Cruz (Remsen *et al.* 1987), but was unknown this far east in Bolivia. It has also been recently discovered in Rondônia and Mato Grosso (Parker *et al.* in press).

WHITE-CRESTED SPADEBILL *Platyrinchus platyrhynchos*

This species was apparently uncommon at both sites. A male, netted in the understorey of the first site on 12 August, was the first specimen for Dpto. Santa Cruz. The only other Santa Cruz record of this species is represented by recordings made in PNNKM in 1989 (T. A. Parker III, pers. comm.).

TOOTH-BILLED WREN *Odontorchilus cinereus*

This canopy wren was uncommon at the first site and fairly common at the second site. Two were collected by TSS and AWK from low, viney forest just east of the second site. This poorly known species is thought to associate mainly with canopy mixed-species flocks (Bates *et al.* 1992), but we also noted them skulking in the viney subcanopy (*c.* 5–8 m up) of forest trees, where they were usually in the presence of *Parula pitiayumi* and *Tachyphonus luctuosus*. The wrens had call notes similar to those of *P. pitiayumi*, but they also gave harsh scolding notes, reminiscent of other wrens. The first Bolivian records of this little-known species, and the only records outside Brazil, were obtained in 1989, farther north in the PNNKM (Bates *et al.* 1992).

ROSE-BREASTED CHAT *Granatellus pelzelni*

Our only record of this rare species was a male netted in the bamboo understorey of the second camp on 26 August. This species had been taperecorded in the PNNKM (Bates *et al.* 1989), but this was the first specimen for Dpto. Santa Cruz. This Amazonian species is local and uncommon throughout its range (Ridgely & Tudor 1989).

SLATY GROSBEAK *Pitylus grossus*

One male was collected by A. Yépez in humid forest at the first camp on 16 August. This uncommon species was occasionally heard singing in dense, tall vine tangles in the mid to upper canopy, but was shy and difficult to see. These records are at the southern periphery of the range of this widespread species (Ridgely & Tudor 1989) and are the first for Dpto. Santa Cruz, and for the PNNKM.

Acknowledgements

The 1990 expedition was funded by the generous donations of John S. McIlhenny. The staff of the PNNKM, under the direction of Ing. Nestor Ruíz, gave their usual enthusiastic support; we particularly thank Gregorio Cerro Grande and Armando Yépez. Permission to work in Bolivia was granted by the Centro de Desarrollo Forestal, under the direction of Lic. Arturo Moscoso. Abel Castillo and Hermes Justiniano, of the Fundación Amigos de la Naturaleza (FAN) in Santa Cruz, were indispensable in helping us organize and bring supplies to our fieldcamps. Armando Yépez of the PNNKM provided invaluable help in the field once again. Juan Surubí also provided much needed assistance in the field. Lic. María Teresa de Centurion, Director, and Marcelo Zalles of the MHNNKM helped with the permitting process in Santa Cruz and provided a valuable link between the MHNNKM and the LSUMNS. Identifications of the hours of tape-recorded bird calls were made by Theodore A. Parker III. This manuscript benefited from critical review by John M. Bates and J. V. Remsen Jr.

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The taxonomy of Steppe and Tawny Eagles, with criteria for separation of museum specimens and live eagles

by William S. Clark

Received 2 August 1991

The Steppe Eagle of the steppes and plains of Asia and eastern Europe and the Tawny Eagle of the savannas of India and Africa were long considered separate species, *Aquila nipalensis* and *A. rapax* respectively, in checklists (Peters 1931, Swann 1931) and regional bird handbooks (e.g. Baker 1928).

Beginning in the 1950s, some authorities (Meinertzhagen 1951, 1954, Vaurie 1965, Brown & Amadon 1968, and others) treated them as races of a single species, for which the oldest name is *A. rapax*. Others, however, continued to regard them as separate species (Grossman & Hamlet 1964, Porter *et al.* 1981, Christensen *et al.* 1981; see especially Brooke *et al.* 1972, Amadon 1982). Most who considered them races (e.g. Glutz von Blotzheim *et al.* 1971, Cramp & Simmons 1980) nevertheless treated them as separate entities because of their differences. Amadon (Stresemann & Amadon 1979) altered Stresemann's original manuscript by combining *nipalensis* with *rapax*. Clancey (1966) considered them component allospecies of a superspecies. The taxonomic arrangement of these eagles in Sibley & Monroe (1990) will be amended in a future revision that will place *nipalensis* and *orientalis* together as the Steppe Eagle *Aquila nipalensis* and will place *vindhiana* and the African forms together as the Tawny Eagle *A. rapax* (B. L. Monroe, pers. comm.).

The taxa involved are:

Steppe Eagle, consisting of two contiguous subspecies in the Palaearctic, *orientalis* in the west and *nipalensis* in the east, that differ only in size. Variation is clinal, larger birds occurring in the east. Both are entirely migratory (Dementiev & Gladkow 1966).

Tawny Eagle, consisting of three subspecies, *rapax* and *belisarius*, contiguous in southern and northern (respectively) Africa and southern Arabia, and *vindhiana* in India. All three are sedentary. Despite present (but presumably not past) separation from African races, *vindhiana* is not very different (Brown & Amadon 1968).

The lack of consensus on the taxonomic status of these eagles has caused confusion; the common names Tawny Eagle and Steppe Eagle are sometimes used interchangeably and sometimes to refer to distinct forms.

Apparently the main reason that various authors considered these eagles conspecific is that they could not distinguish all individuals (e.g. Meinertzhagen 1954). Herein I present criteria for the correct identification of all museum specimens and live birds in the hand of both eagles by either morphology or plumage.

Based on my museum and field experience with Steppe and Tawny Eagles in Israel, Egypt, Kenya and India. I find them to differ in plumage, structure and proportions, flight, feeding ecology, and breeding habitat. I suggest that taxonomists reconsider the reasons for treating them as conspecific.

Sources and methods

Information on Steppe and Tawny Eagles was gathered by searching the pertinent literature (LeFranc & Clark 1983), by studying museum specimens, and by observing and photographing both forms in the field.

All specimens of both forms ($n > 100$) were examined and studied in the collections of the American Museum of Natural History (AMNH), United States National Museum of Natural History (NMNH), Bombay Natural History Society (BNHS), Tel-Aviv University, and Philadelphia Academy of Natural Sciences. Standard measurements of wing chord, exposed culmen and hallux length were taken on each specimen. In addition, two measurements were taken on the gape; one was the width from one edge of the mouth to the other, and the second was the length from the edge of the mouth to a point directly below the vertical line where the upper mandible enters the skin. Plumage details of each specimen, particularly those with plumage types shared by both eagles, were noted. After a draft of this paper had been prepared, all specimens of both forms ($n > 200$) in the British Museum (Natural History) (BMNH) were examined.

Thousands of Steppe Eagles were observed and many photographed in Israel and Egypt between 1980 and 1988. Tawny Eagles were observed and photographed in Kenya in 1986, and both eagles were observed and photographed in India in 1985, 1990 and 1991. The photographs were studied for structure and plumage detail. Thirteen Steppe Eagles captured for ringing in Israel were photographed in the hand. Dozens of Steppe Eagles that were in rehabilitation centres in Israel were observed closely, as were three Indian Tawny Eagles sent to Israel for release.

Results

As detailed in many references and observed in all specimens and many photographs, Steppe Eagles and Tawny Eagles differ in plumage, overall size and proportions, structure of beak and gape, and ecological niche; in particular, there are differences in breeding habitat, in prey, and in hunting, social and migratory behaviour. Three similar plumages are shared, but on closer inspection, all are distinct.

All museum specimens and live eagles in the hand can be identified as Steppe or Tawny either by gape measurements or by plumage; consistent results are provided by both methods. In spite of this, I found dozens of museum specimens of one eagle misidentified as the other, or even as other eagles.

Literature

Most field researchers studying birds of prey in eastern and southern Africa, where both eagles occur during the northern winter, consider them to be separate species (e.g. Irwin & Benson 1986, Dowsett & Dowsett-Lemaire 1980, Steyn 1982). Brooke *et al.* (1972) list differences in plumage, structure, iris colour in adult, food preferences, and migratory and social behaviour as reasons for separation. Kozlova (1975), who studied the Steppe Eagle in the Soviet Union, also considered it sepcifically distinct from the Tawny Eagle.

Amadon & Bull (1988) wrote: "See Snow (1978) for reasons for keeping it [*nipalensis*] a subspecies of *A. rapax*." However, Snow (1978) argued rather unconvincingly that North African birds (*belisarius*) were intermediate, perhaps because they have a dark morph, lacking in southern Africa. Note that Amadon (1982) previously considered them separate species.

Ecological niche

Tawny and Steppe Eagles are allopatric, despite hints in the literature that their breeding ranges overlap in India. There are no breeding records for the Steppe Eagle from India (Baker 1928, Ali & Ripley 1978), which is not surprising, as its breeding habitat is arid steppe (Dementiev & Gladkow 1966). The Tawny Eagle, on the other hand, breeds in a variety of grassy savanna habitats in India and Africa (Ali & Ripley 1978, Brown *et al.* 1982).

Tawny Eagles are active predators that take a wide range of prey from small to large; Steyn (1982) states that they capture mammals up to twice their weight and have even struck down flamingos. Smeenk (1974) studied their food in detail in East Africa and wrote: "Summarizing, the Tawny Eagle is ecologically the most wide-ranging large African bird of prey, taking whatever ground animals are readily available, from insects to small antelopes; scavenging and robbing of other predators are practised wherever there is an opportunity." Steyn (1973) also reported a wide range of prey for Tawny Eagles. On the other hand, Steppe Eagles on the breeding grounds specialize in capturing small mammals, mainly rodents (Dementiev & Gladkow 1966). Tyurekhodzhaev (1977) reported that 90% of the Steppe Eagle's diet are sousliks (ground squirrels) *Citellus pygmaeus*. Semenov *et al.* (1962) found that Steppe Eagle and souslik populations fluctuated in synchrony. From the literature it is clear that they do not take nearly as wide a range of prey, nor take prey as large, as do Tawny Eagles, either when breeding (Cramp & Simmons 1980) or on wintering grounds (Brooke *et al.* 1972, Steyn 1982).

From my field observations, Tawny Eagles appear to be much more active predators than Steppe Eagles; a view shared by Steyn (1982), who wrote about the Tawny: "It is a rapacious eagle, as its specific name *rapax* correctly indicates." While airborne, both eagles will drop on prey and chase other predators to attempt piracy, but only the Tawny consistently uses powered flight to chase both prey and other predators.

Another difference between these eagles is that the entire population of Steppe Eagles leaves the breeding ground and migrates to either India or Africa (Dementiev & Gladkow 1966, Cramp & Simmons 1980). The Tawny Eagle is mostly sedentary; movements, if any, are usually in response to wet or dry season (Thiollay 1978).

Finally, Steppe Eagles are rather social, gathering in small to large groups to feed and migrate and forming communal night roosts (Brooke *et al.* 1972). Tawny Eagles are usually solitary or, at most, occur as pairs and are not reported to form communal night roosts.

Plumages

Steppe and Tawny Eagles differ considerably in plumage at all ages, particularly differing in the variety of plumages. Tawny Eagles are polymorphic and vary greatly in plumage; but the plumages of individuals change little with age, with the exception of the dark-breasted birds mentioned below. Steppe Eagles' plumages are much less variable within age classes; most variation is with age, birds becoming much darker as adults.

Adult Tawny Eagles' underparts vary from solid pale creamy, solid tawny, or solid rufous to tawny with rufous streaking or rufous with dark brown streaking, to uniform dark brown. Adult Steppe Eagles are less variable and have solid dark brown underparts.

Many, if not all, non dark-morph Tawny Eagles have a plumage that is quite different from any Steppe Eagle plumage. This is characterized by a dark brown breast and pale belly and is most likely worn for a year or two between juvenile and adult plumages.

Juvenile and first-year Tawny Eagles likewise show a wide variety of underparts colour, varying from solid pale creamy to solid dark brown with almost every intermediate shade.

Nevertheless, Steppe and Tawny Eagles have three similarly coloured plumages in common: dark-brown, grey-brown, and rufous-tawny, so called because of the bird's overall colour. However, on close inspection, all three are consistently different in several details, as set out below.

Tawny Eagle	Steppe Eagle
Solid dark brown colour	
Adult. Dark-morph is solid dark brown; nape dark, often with pale feather tips.	Adult. Always have rufous nape patch.
Iris is yellow.	Iris is brown, pale flecking.
Younger birds have paler leg feathers and undertail coverts and often pale spots on nape and belly. Coverts are uniformly coloured.	Subadults head and back paler; they may lack nape patch. Their undertail, uppertail, and greater primary underwing coverts are brown and white.
Grey-brown or rufous-tawny colouration	
All ages. Underwing coverts are uniformly coloured. Juveniles and first summer birds have narrow white tips to unbarred secondaries. Undertail coverts are same colour as belly. Uppertail coverts are same colour as back, not white.	First three years. Wide white tips to barred secondaries and greater upperwing and underwing coverts on most birds; always on greater primary underwing coverts. Undertail coverts white, contrast with brown belly. Uppertail coverts are white.
Rufous-tawny birds are common; grey-brown birds occur frequently.	Rufous-tawny birds are rare; grey-brown birds are common.

Structure

The most consistent and easily measured morphological difference between these eagles is the size of the gape. As shown in Jankowitz (1976) and Biggs & Biggs (1978), this is proportionally larger in the Steppe Eagle. Two gape measurements can be used to identify all individuals, either alive or dead (Table 1). Extremely large female Tawny Eagles and small male Steppe Eagles overlap slightly, but accurate sex information and plumage characters will serve to separate them in these cases.

While Steppe Eagles are generally larger, there are overlaps in the measurements of wing chord, exposed culmen and hallux, even between individuals of the same sex. However, as Brooke *et al.* (1972) pointed out, Steppe Eagles are more sexually dimorphic in hallux length than are Tawny Eagles, though my measurements (Table 2) do not indicate as much difference as do theirs.

In flight Tawny Eagles show a more classic aquiline silhouette (Steyn 1982); compared to flying Steppe Eagles, they tend to show a longer head and neck projection and to hold their wing less drooped when soaring and gliding. Steppe Eagles, when perched on the ground, appear more horizontal and elongated than Tawny Eagles, which stand more erect and do not appear elongated.

Steppe Eagles reach definitive or adult plumage by 4 years of age (Dementiev & Gladkow 1966). Confirming this I found only 4 non-adult plumages; this conclusion is based on moult, primarily of the secondaries. Age to maturity is thus not a definitive difference between these eagles as suggested by Brooke *et al.* (1972), who thought that it took Steppe Eagles

TABLE 1
Gape measurements of Tawny and Steppe Eagles

	Mean width (mm)		Mean length (mm)	
	Male	Female	Male	Female
Tawny Eagle	43.6 (50)	44.5 (50)	34.0 (50)	35.0 (50)
(range)	(40.3–47.8)	(40.8–49.9)	(30.0–37.5)	(33.2–41.0)
Steppe Eagle	53.1 (37)	55.3 (31)	44.3 (38)	45.8 (34)
(range)	(49.0–58.1)	(52.3–60.8)	(40.0–48.0)	(41.8–49.7)

Note. There is no overlap in measurements within sexes and only a slight overlap between forms.

TABLE 2
Hallux measurements of Tawny and Steppe Eagles

	Mean length (mm)	
	Male	Female
Tawny Eagle	31.6 (50)	33.0 (50)
(range)	(27.0–36.9)	(29.0–37.0)
Steppe Eagle	33.8 (38)	36.0 (34)
(range)	(28.3–36.8)	(31.8–40.5)

Note. Steppe Eagles are somewhat more dimorphic in hallux measurement than are Tawny Eagles.

6 or 7 years and Tawny Eagles only 4. It is unlikely that Steppe Eagles differ from other large eagles that reach maturity in 4 or at most 5 years, e.g. Golden Eagle *Aquila chrysaetos* (Jollie 1947), Bald Eagle *Haliaeetus leucocephalus* (McCollough 1989), and White-tailed Eagle *H. albicilla* (Forsman 1981).

Discussion

That Tawny and Steppe Eagles differ almost everyone agrees; even most authorities who have considered them conspecific have treated them separately. What is disputed is their taxonomic relationship. Are they one species or two?

There is a surprising paucity of supporting arguments given by the various authorities who considered them conspecific; Snow (1978) based his argument on the false assumption that the breeding range of Steppe Eagles and Indian Tawny Eagles were contiguous (and, as a result, that they intergraded). The single consistently stated reason for lumping them was that some individuals appeared identical, or nearly identical, to individuals of the other eagle. This argument is not convincing, considering that general similarity of appearance plays a minor part in our present thinking on what constitutes a species and that now all individuals of these eagles can be correctly identified. Behavioural differences, particularly those relating to mate selection, are now considered more important in defining species differences.

Misidentification of museum specimens of these eagles has hampered efforts to study their taxonomic status. This was, no doubt, one source of confusion to some authors who examined and compared misidentified with correctly identified specimens of each eagle and, finding no differences, considered them conspecific. Similarly, lack of discrimination in the field during the periods when both species occur in Africa and India has further blurred the difference between them, particularly behavioural differences.

Avian taxonomy has been aided by new laboratory analytic techniques that compare genetic material or blood proteins from two or more forms; use of these techniques would help determine the true taxonomic relationship of these eagles. However, the conclusive test of whether they are one or two species would be if their breeding ranges overlapped. Should this happen, I believe that Steppe and Tawny Eages would not interbreed because of their ecological and behavioural differences.

In summary, Steppe Eagles and Tawny Eagles differ in the following taxonomic characters: morphological (plumage, gape structure, and hallux dimorphism), ecological (food and breeding habitat), and ethological (hunting, social, and migratory behaviours). Combining them was based solely on superficial similarities. Steppe Eagles and Tawny Eagles should be considered separate species, *A. nipalensis* and *A. rapax*.

Acknowledgements

I thank the curators and collection managers at the American Museum of Natural History, Bombay Natural History Society, British Museum (Natural History), Philadelphia Academy of Natural Sciences, Tel-Aviv University, and U.S. National Museum of Natural History for permission and assistance in examining specimens. The following are thanked for providing helpful comments on earlier drafts: D. Amadon, R. Banks, R. K. Brooke, and A. Kemp.

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A new *Phylloscartes* (Tyrannidae) from southeastern Brazil

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Received 8 August 1991

Small flycatchers of *Phylloscartes* and related genera are among the characteristic birds of woodlands and forests in eastern Brazil. Some, such as *P. roquettei* of *caatinga* woodlands in Minas Gerais and the recently described *P. ceciliae* of upland forest in northeastern Brazil, have been little known (Willis & Oniki 1991, Teixeira 1987). Here we describe a new form of the *P. ventralis* group from coastal sand-ridge woodlands (*restinga*) and nearby riverine zones of the Ribeira Valley, southeastern São Paulo State. The form occurs south along the coast at least to Joinville, Santa Catarina (specimen in Field Museum Natural History, Chicago, *fide* D. F. Stotz).

From 5 to 10 July 1983, visiting the scrubby *restinga* or sand-ridge woodlands near Boqueirão, 13 km SW of the northeastern end of Ilha Comprida and opposite Iguape in southeastern São Paulo State, we noted a new call from small flycatchers that looked confusingly like several other species in the state. They had long bills and mottled faces like *P. ventralis*, a bird we knew well from the serras and interior plateau just northwest, but were so yellow on the face and underparts that we thought they might be *Phyllomyias virescens*, a species we also knew from Campos do Jordão and other serras of over 1200 m elevation to the north. We recently collected two calling birds from Ilha Comprida and, after examining these and other specimens, consider that the form merits specific status.

Phylloscartes kronei sp. nov.

Holotype. Universidade Estadual Paulista "Museu de Ciências da Natureza—Campus Rio Claro, Zoologia", (MCN) no. 1, female from Jardim Europa, 25°01'S, 47°54'W, near *morro* (hill) on Ilha Comprida opposite Cananéia, São Paulo State, Brazil, 3 June 1991, prepared by Yoshika Oniki.

Paratype. MCN no. 2, male, same location, date, and preparator.

Diagnosis. Like *Phylloscartes ventralis* but yellow instead of white on superciliary line, brighter yellow on facial pale areas and throat, buff tint across chest lacking and replaced by faint greenish mottling. Greener and less buff-green or brownish-green on crown and back than *P. ventralis*. Post-auricular crescent usually darker. Tail usually 3–5 mm shorter than wing, not 1–3 mm shorter as in *P. ventralis*. Bill averaging larger than in *P. ventralis*, although tarsus and wing chord similar.

Distribution. *Restinga* (sand-ridge) woodlands on coast of southeastern São Paulo State, Brazil, from Ilha do Cardoso region north just past the mouth of the rio Ribeira, thence upriver to the side streams of the region between Juquiá and Sete Barras at the southern base of the São Paulo interior plateau. Joinville, Santa Catarina and probably other coastal localities between there and São Paulo.

Description of holotype. Yellowish olive-green above, with slight brownish tint on crown. Blackish lores, postocular streak, postauricular crescent, and yellow-mottled moustache. Wing coverts, remiges and tail blackish, the greater and median coverts with yellow tips forming two wing bars; tips of inner secondaries yellow on their outer webs; outer fringes of remiges yellowish, of rectrices greenish. Yellowish superciliary line and speckling on forehead, face below eye, and auricular area. Underparts yellow, brighter on abdomen and paler on throat, clouded with very faint greenish mottling on flanks and breast to throat. Thighs barred yellow and greenish. In life, iris brown, tarsi and feet black, bill black except pale basal two-thirds of lower mandible.

Measurements of holotype. Wing (chord) 50 mm, tail 45 mm, culmen from base 13.5 mm, tarsus 17 mm, weight (early morning) 7.8 g.

Description of male (paratype). Like female but larger: wing 55.5 mm, tail 48 mm, culmen 15.1 mm, tarsus 20 mm, weight (early morning) 8.8 g.

Specimens examined. P. kronei—São Paulo: Jardim Europa 1 ♂, 1 ♀ (MCN); rest from Museu de Zoologia da Universidade de São Paulo (MZUSP): Iguape 1 sex? (MZUSP 107, collected 1898 by R. Krone); Tabatinguara 1 ♂; Costão dos Engenhos 2 ♂, 4 ♀; 1 sex?; Ilha Comprida 1 ♀; Barra do Icapara 1 ♂; Embu (rio Ribeira) 8 ♂ (one being ♀ by measurements), 7 ♀, 6 sex?; Primeiro Morro 6 ♂, 7 ♀, 2 sex?; Porto Estrada 5 ♂, 1 ♀; Barra do ribeirão Onça Parda 7 ♂ (one ♀ by measurement); Onça Parda 2 ♂ (one ♀ by measurement), 1 sex?; Tamanduá 2 ♂, 1 ♀; Ribeirão Fundo 1 ♂; Poço Grande 2 ♂, 2 ♀; Barra do rio das Corujas 4 ♂, 4 sex?

P. ventralis (all MZUSP)—Rio Grande do Sul: 1 ♂, 1 ♀; Santa Catarina: Rio das Antas 2 ♀; Paraná: Castro 3 ♂, 2♀, 1 sex?; São Paulo: Itararé 1 ♂, 1 ♀, 1 sex?; Itapetininga 2 ♂; Avaré (Fazenda Santa Magdalena) 1 ♀; Porto Cabral 1 ♀; Lins 1 ♂; Campo Grande 1 ♂; Primeiro Morro 1 ♀; Taquaral (São Miguel Arcanjo) 1 ♂; Pilar 1 ♂; Embura 1 ♂; Embu Guaçu 1 ♀, 1 sex?; Ipiranga 3 ♂ (one ♀ by measurement); Itatiba 1 ♂; Jundiaí 1 ♀; Taquaraçu 1 ♂, 1 sex?; Terra Preta 2 ♂, 2 sex?; Alto da Serra 1 ♂, 4 sex?; Pinhalzinho 1 ♂; Boracéia 2 ♂, 1 ♀, 1 sex?; Serra da Bocaina 3 ♂, 2 ♀; Rio de Janeiro: Itatiaia 2 ♂, 3 ♀; Teresópolis 2 ♂, 1 ♀; Minas Gerais: Maria da Fé, 1 ♀.

Etymology. We name this species after Ricardo Krone of Iguape, who was the premier zoologist of the first agricultural boom of the Ribeira Valley at the turn of the century and collected the first specimen of the new form in 1898. That Hans von Berlepsch himself examined the specimen and identified it as *P. ventralis* seems worthy of note.

Habitat and behaviour

We found the new flycatcher regularly at woodland edges and in second growth or scrub woods all over the sandy coastal *restingas* of Ilha Comprida and, to the southwest, Ilha do Cardoso and the island of Cananéia. Northwestward, it was in similar low beach woodlands near Barra do Ribeira.

We never found it on the nearby coastal hills and isolated serras, even 100 m from the coastal plain. However, in the Museu de Zoologia of the

University of São Paulo there are specimens from the rio Ribeira floodplain, from near Barra do Ribeira (Embu) past the northern base of the serra of Iguape (Costão dos Engenhos) to the base of the distant serra of Paranapiacaba (Fig. 1).

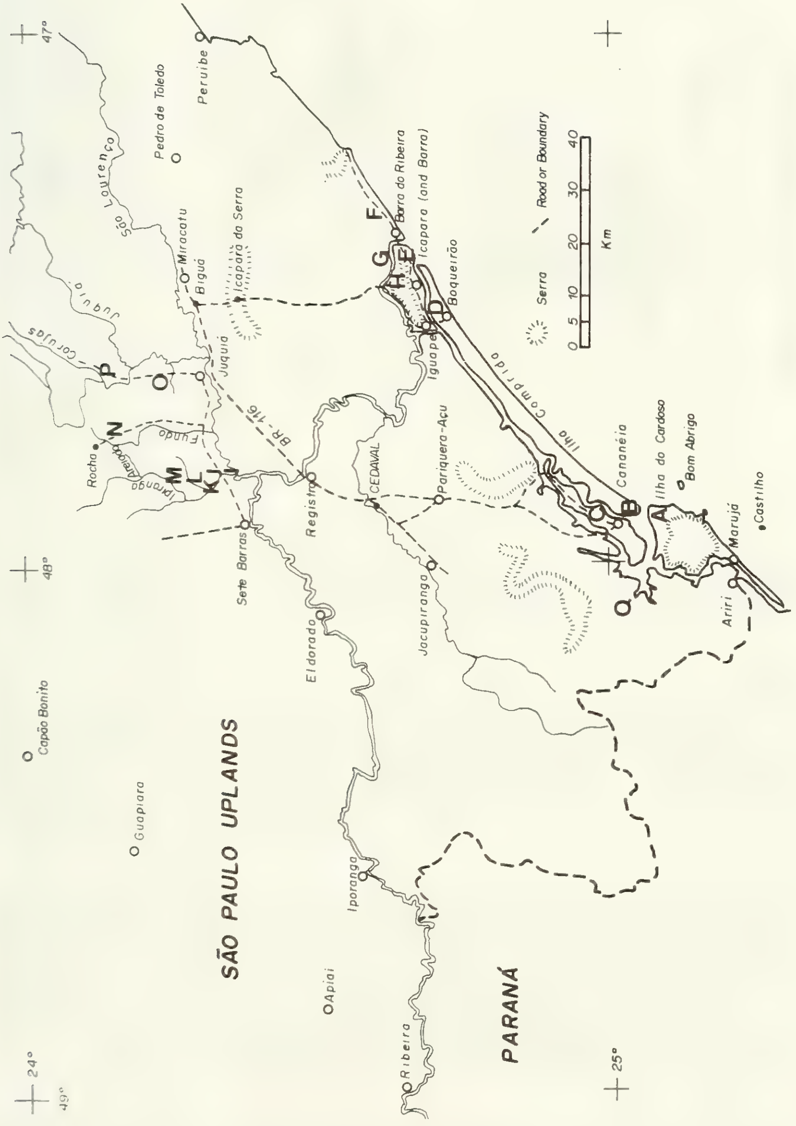
Collections from even a little above the Ribeira/Juquiá floodplains (Rocha) lack the species. Such areas are often in tall forest, apparently never cultivated during the peak of banana and other plantations at the time of Krone. We have not found the species in the *restinga* woods of Bertioga and Ubatuba, northeastern São Paulo, but have not investigated *restingas* south into Paraná or northeast in the Juréia and Peruibe regions.

Specimen labels of A. M. Olalla, collector of one Ilha Comprida and dozens of Ribeira Valley birds, often indicated second growth (*capoeira*) and that the bird was in pairs or small groups, as we also noted. It flits short distances to snap insects from leaves in the outer foliage of small trees and bushes, often with tail somewhat raised, much like similar small *Phylloscartes* everywhere. To us, it seems less active and less "flitty", less likely to lift its tail or sally to the upper surfaces of leaves, than *P. ventralis* of the mountains, which has received the name *borboletinha* ("little butterfly") in Rio Grande do Sul (Belton 1985). It usually perches on twigs just inside the outer foliage, looking about and hopping or flitting short distances until it sallies for prey. In the cooler early morning and late afternoon, it can appear on twigs outside the foliage or even atop small trees. It does not frequent tall, epiphyte-laden trees of forest zones.

It often forms part of mixed flocks of small birds in the *restinga*, including similarly foraging but more woodland-interior Golden-crowned Warblers *Basileuterus culicivorus*. Small groups in December are probably families, as on 14 December 1984 on Ilha Comprida (Jardim Europa) Willis and J. Ragusa Neto found two full-sized pale-bellied young still fed by and following a pair. These young were silent, unlike the young of *P. ventralis* mentioned below. Pale-bellied specimens in MZUSP are from November and December, and some have small or weak (laterally compressed) beaks.

The netted pair were attracted by playing back calls of one, perhaps the female; recordings were of a bird that stayed low and centrally as the other ranged up and down and widely about it, early in the morning. They flew silently but repeatedly to the recorder until the female and then the male were captured 100 m from where recorded. The pairs seem to maintain territories along roads and in low woodlands and to be spaced 100–200 m from their neighbours, suggesting densities of one pair per hectare or so.

Figure 1. Approximate locations for *Phylloscartes kronei*. A, Ilha do Cardoso; B, Jardim Europa (type locality); C, 3 km N Cananéia; D, Boqueirão; E, NE of the Barra do Icapara; F, NE of Barra do Ribeira. Collected (MZUSP) at Barra do Icapara and Embu (G), Costão dos Engenhos (H), Primeiro Morro (I), Porto Estrada (J), Barra do ribeirão Onça Parda (K), Onça Parda (L), Tamanduá (M), Ribeirão Fundo (town at N), Poço Grande (O), Barra do rio das Corujas (P), Tabatinguara (Q); plus "Iguape". In Field Museum, Chicago, also from Joinville (Santa Catarina), Barra do rio Juquiá, and Trapandé (Pasto Grande), *fide* D. F. Stotz.


47°
48°
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24°
25°
Peruibe
Pedro de Toledo
São Lourenço
Juquiá
Corujas
Miracatu
Biguá
Icapara da Serra
Juquiá
BR-116
Fundo
Rocha
Areado
Ipiranga
P
O
N
M
L
K
J
I
Sete Barras
Registro
CEDAVAL
Pariquera-Açu
Jacupiranga
Eldorado
Iporanga
Ribeira
Apiaí
Capão Bonito
Guapiara
SÃO PAULO UPLANDS
PARANÁ
F
G
H
E
D
Barra do Ribeira
Icapara (and Barra)
Boqueirão
Iguape
Ilha Comprida
Cananéia
Ilha do Cardoso
Bom Abrigo
Castilho
Marujá
Ariri
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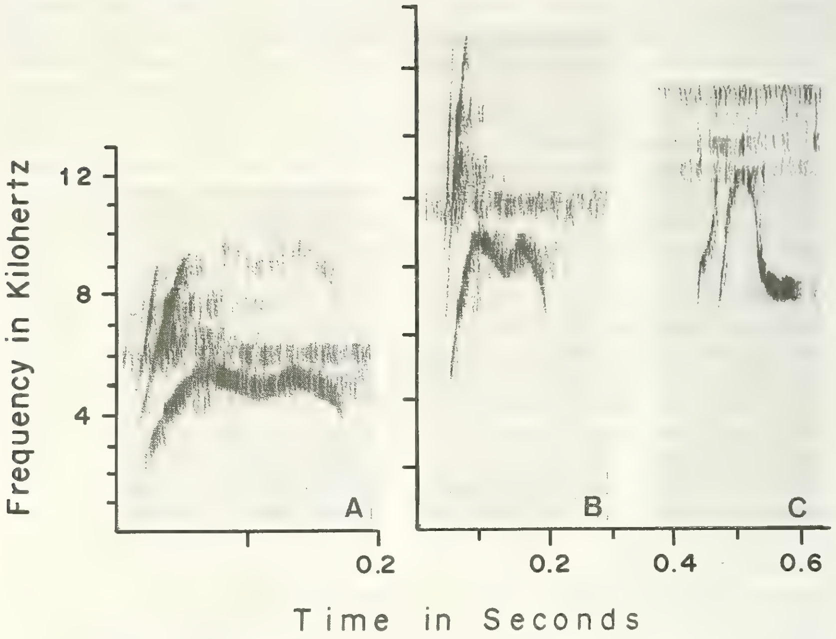

Figure 2. *Feesee* call of *Phylloscartes kronei* sp. n. (A, B) and similar *plee-e* of *Myrmotherula unicolor* (C). Copies of recordings are in the University of Florida and Universidade Estadual de Campinas (SP) sound libraries.

Voice

The frequently repeated call (Fig. 2), a short *feesee* or *plea* rather like the call of *Myrmotherula unicolor* (Formicariidae), is unlike any other flycatcher in São Paulo. The twittering and rapid little song, rather like several other small flycatchers, Willis registered as *sit-it-it-it-it-it-it-it-it-it-sitit-sitit* on 10 July 1983. In flight, there is sometimes a noisy short flutter of wings, as in several other small flycatchers, including *P. ventralis*.

P. ventralis repeatedly calls a faint *tic*, at times double or triple, as noted by Belton (1985: 38). Belton also mentions two types of songs. The young (Itapetininga, 19 December 1986) call, twice per second, a note like the alarm call of Rufous-collared Sparrows *Zonotrichia capensis*. *P. virescens* in the São Paulo mountains often utters a fast descending *chi-i-i-i-i-i-i* trill or rattle and gives a twittery song with several high notes just before the end, as Belton (1985: 18) describes for Rio Grande do Sul.

Geographic overlap

This lowland bird is not known to overlap with highland *P. ventralis*, except that one September bird from Primeiro Morro (MZUSP 48476) seems to be *P. ventralis* while the rest are *P. kronei*. It seems likely that the single *P. ventralis* was a wintering bird or wanderer. The ranges of the two

TABLE 1
Measurements of *Phylloscartes* of the *ventralis* group

	Males						Females					
	P. ventralis			*P. kronei*			*P. ventralis*			*P. kronei*		
	n	mean	s.d.	*n*	mean	s.d.	*n*	mean	s.d.	*n*	mean	s.d.
Tarsus	30	19.4	0.8	33	19.4	0.6	19	18.4	0.7	21	18.3	0.8
Wing	29	54.1	2.3	38	53.9	1.8	19	49.9	1.7	23	49.0	1.3
Tail	30	52.7	2.4	38	49.6	1.4	18	48.8	2.2	23	45.7	1.3
Culmen[a]	30	13.9	0.6	38	14.6	0.5	17	13.5	0.5	22	13.8	0.4
Bill width[b]	30	3.1	0.2	36	3.4	0.2	19	3.0	0.2	21	3.4	0.2
Bill height[b]	24	3.0	0.1	27	3.1	0.1	19	3.0	0.2	18	3.1	0.2

[a] From skull. All measurements exclude birds that seemed mis-sexed (see Specimens examined)
[b] At anterior end of nares.

seem to be separated by tall lower montane Atlantic coastal forests on the lower slopes of the coastal serras.

Measurements

Table 1 shows that males are larger than females in both *P. ventralis* and *P. kronei*. Wing and tarsus measurements are similar in both forms, but the tail is significantly shorter in both sexes of *P. kronei* ($P < 0.01$, *t*-tests), about 4 mm shorter than the wing rather than 1 mm shorter as in *P. ventralis*. The bill of *P. kronei* is slightly but significantly larger ($P < 0.03$, *t*-tests) in all dimensions, except for height in females. The larger bill and shorter tail may be related to its less aerial foraging, under rather than over leaves, for a long tail may help *P. ventralis* turn more quickly in aerial chases and a smaller bill be better in aerial snapping than in striking at prey under leaves, where a larger bill might help *P. kronei* (as in the leaf-striking genus *Todirostrum*). We would expect a bird in the hot, sunny lowlands to forage less on the outside of foliage than a bird in the cool, mist-shrouded uplands. However, foraging of the two forms should be studied in detail.

Taxonomic status

The new bird is very close to upland *P. ventralis* except in voice, tail and bill, yellow face and underparts, and in lacking brown-buff tones on chest and back. We thought there might be some intermediate Ribeira birds in the MZUSP collections on our first visits, under artificial light, but a later visit on a sunny afternoon allowed all specimens to be separated.

P. ceciliae of northeastern Brazil is probably a pale form of the *ventralis* group, judging by its behaviour and mottled face, not a relative of *P. difficilis*. It differs in plumage and voice (Willis, recordings) from *P. kronei*.

The relationship between the *restinga* tanager *Tangara peruviana* and upland woodland *T. preciosa* is very similar to that between *P. ventralis* and *P. kronei* in São Paulo. In some books these tanagers are considered species (Ridgely & Tudor 1990), in others subspecies (Sick 1985).

Another similar case is *Cnemotriccus f. fuscatus* of *restinga* and Ribeira woods versus planalto *C. f. bimaculatus*, possibly a separate species (Belton 1985) and seemingly different in voice (Willis, pers. obs.). In the case of the hummingbird *Amazilia versicolor*, the coastal form (*brevirostris*) in São Paulo is white from throat to belly, the upland form green-spangled, while intermediate birds come from the serra just above the rio Ipiranga (MZUSP specimens). We suspect that in these groups, as in the *P. ventralis* group a woodland bird may have been separated into coastal and interior populations by the humid and tall coastal lower montane and cloud forests.

Songs differ in the upland *A. v. versicolor* and lowland *A. v. brevirostris*. Hummingbird songs are known to vary locally, as in many songbirds, in which birds learn their songs and may show local dialects. Flycatchers apparently have innate songs (Kroodsma 1984) and rarely show dialects, although Lanyon (1978) records some cases in *Myiarchus* (*swainsoni*, for instance). He tested the reactions of one group to playback songs of the other. If birds reacted to both song types in areas of parapatry, he considered the birds to be conspecific. We are uncertain, however, what reaction to another song type represents. If it is a reaction to a territorial competitor (interspecific territoriality), it may be related to food competition rather than to the possibility of an extra-pair copulation (EPC). Gene exchange between two populations is not necessarily shown by reaction to songs. Reactions by *P. kronei* and *P. ventralis* to recorded songs or calls might be interesting, however.

We conclude that *P. kronei* is likely to be a separate species, based on our experience with the remarkably similar plumages but dissimilar voices in *Phylloscartes* flycatchers. A detailed study of biochemistry and of Ribeira Valley populations, to determine if there is hybridization, might resolve the question of subspecific versus specific status. In cases of limited hybridization or secondary intergradation, recent tendencies have been to treat the forms concerned as separate species, but 'regional polymorphisms' have been suggested where mixed pairs occur in zones of local sympatry or parapatry in such cases as *Basileuterus culicivorus/hypoleucus*.

Conservation

The limited range of *P. kronei*, especially in view of the high demand for beach-front property in São Paulo southward, gives ample reason for concern, whether it is a species or just a well-marked subspecies. With the building of a bridge, Ilha Comprida has become riddled with roads for proposed developments, of the kind that are destroying *restinga* zones to the north. Ilha do Cardoso is protected but is mostly a serra, with little *restinga* woodland. The Ribeira Valley is rapidly losing forests and even second growth. *P. kronei* may occur in the protected Juréia Park to the northeast or in protected areas to the south, but this needs study.

Loss of the southwestern 30 km of Ilha Comprida to development would be a considerable setback to *P. kronei* and to remnants of local populations of the endangered parrot *Amazona brasiliensis*. Illegal capture of the latter, via roads, has reduced its populations there in recent years. *Tangara peruviana* depends on *restinga* woodland and is also endangered, while a new subspecies of *Aramides cajanea* is being described from nearby mangroves by D. F. Stotz. Local subspecies of *Amazilia versicolor*, *A. fimbriata* and *Cnemotriccus fuscatus* occupy the *restinga* edges. Northward in Rio de Janeiro, the rare antbird *Formicivora melanonotus* and new subspecies of *F. serrana* live in *restingas* (Pacheco 1988, Gonzaga & Pacheco 1990). We suggest that it is time for serious discussion of *restinga* faunas and floras in public and in congresses, to restrain beach development. We suggest that the new species be called Restinga Tyrannulet in English (*maria-da-restinga* in Portuguese) to emphasize the conservation problem involved.

Acknowledgements

The Conselho Nacional de Desenvolvimento Cientifico e Tecnológico (CNPq) and Fundação de Amparo à Pesquisa do Estado de São Paulo financed studies. D. F. Stotz helped with suggestions, specimens in Chicago, and his experiences with the genus. We made sonagrams at J. W. Hardy's laboratory at the University of Florida, Gainesville, U.S.A.

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A new subspecies of the Slender-billed Miner *Geositta tenuirostris* (Furnariidae) from Ecuador

by Niels Krabbe

Received 15 August 1991

The Slender-billed Miner *Geositta tenuirostris* is confined to the Andes, where it was known from Tucumán province, northwestern Argentina, to Cajamarca department, western Peru. It has been found at altitudes of 2500–4600 m, but mainly occurs on the slopes at the edge of the highlands, at 3000–4000 m. Here it frequents semi-humid country and prefers gently sloping ground with very short grass or matted vegetation, interspersed with patches of bare soil (including small potato fields), and low banks that are used for nesting. Several small areas in the Ecuadorean Andes seem to represent suitable habitat, but the species had never been recorded north of the north Peru low. It was therefore a surprise to find the species on 7 August 1990 on the slopes of Volcán Iliniza in the northern half of Ecuador, almost 1000 km north of the previously known range of the species (and the genus). Two specimens were collected and appear to represent a new subspecies:

Geositta tenuirostris kalimayae subsp. nov.

Type. Zoological Museum, University of Copenhagen, no. 80062, adult female, province of Cotopaxi, slope on northwestern side of Planadas de Guintza, highest point of new road to Sigchos (00°44′S, 78°45′W), elevation 3350 m; collected by N. Krabbe 7 August 1990. Cotype Museo Ecuatoreano de Ciencias Naturales, Quito, no. 5796, adult male, apparently the mate of the type.

Description. (Capitalised colour names from Ridgway 1912.) Crown, mantle, back, rump, and upper tail-coverts Drab. Wing coverts Bister edged Clay Color. Tertials between Clove Brown and Sepia, edged Pinkish Buff, Tawny along shafts, most so on inner webs. Remiges Tawny with dark markings that are between Clove Brown and Sepia. Outer (1st) remex wholly dark; 2nd–5th with increasing amounts of Tawny at base and on inner webs to 15–20 mm from tips; 5th with outer web narrowly edged Tawny, 6th with 15 mm wide dark tip and with Tawny wash to most of outer web; 7th–10th with a 10 mm wide subterminal dark area; 11th with subterminal band somewhat reduced and only conspicuous as a spot 10 × 5 mm around the shaft; 12th–16th with 2–3 mm wide dark band diagonally from around shaft 5 mm from the tip up along edge of outer web, ending 10 mm from tip of wing coverts. Central (1st) rectrix Bister, pale and faded owing to wear along edges; 2nd Tawny basally on inner web to 10 mm from tip; 3rd Tawny with dark tip 10 mm wide; 4th with 1 mm wide Tawny tip on inner web, and with a dark subterminal band 6 mm wide; 5th similar to 4th, but the dark subterminal band only 3 mm wide but continuously across the web; 6th

TABLE 1
Measurements (mm) and weights (g) of *Geositta tenuirostris*

	Flattened wing	Tail	Bill to skull	Bill to nostrils	Weight
G. t. kalimayae					
♂	107	57	29	19.0	30
♀	101.5	54	28.5	18.2	31
G. t. tenuirostris					
♂♂	110.5	61.0	31.0	21.7	34.3
	(108–113)	(57–66)	(28.7–33)	(20.5–24)	(29–42.5)
♀♀	109.0	57.0	31.1	21.1	33.2
	(104–113)	(53–60)	(29.4–33.5)	(20.2–22.2)	(32–35.5)

Note. For *G. t. tenuirostris*, means and ranges are given. For all measurements, $n=4$; for weights, $n=7$ for males, $n=3$ for females.

rectrix with the outer 30 mm of outer web whitish, base and inner web Tawny with ill-defined dark subterminal band 1.5 mm wide from shaft to edge of inner web, and a faint dusky wash down middle of inner web. Supercilium, mottling on headside, and underparts buffy white, breast-feathers edged Drab, giving a streaked effect. Under wing coverts Tawny. Iris dark brown; bill dark grey, basal part of underside of mandible flesh, gape yellow; feet plumbeous. Weight 30 g, light fat. Skull fully ossified. Brood patch present, but not much vascularised. Largest follicle 1.5 mm. Stomach: insect larvae and imago beetles. Wings 101.5, tail 54, tarsi 23, bill from skull 28.5, bill from anterior edge of nostrils 18.2 mm.

Description of cotype. Identical to the type in colouration of plumage and soft parts. Weight 30 g, no fat. Skull fully ossified. Testes enlarged, 8 × 4 mm. Stomach: insects (larvae and imagos). Wings 107, tail 57, tarsi 24, bill from skull 29, bill from anterior edge of nostrils 19.0 mm.

Diagnosis. *G. t. kalimayae* differs from nominate *tenuirostris* by being smaller (Table 1) and greyer, averaging more streaked on the breast, and especially by having more extensive dark areas in wings and tail, with the subterminal dark band on the penultimate rectrix stretching across the entire feather, while it is reduced to a broken band, a tiny spot along the shaft, or completely absent in nominate *tenuirostris*. The outer rectrix has an almost complete narrow dark band near the tip and a dusky wash on parts of both webs in *kalimayae*, while this rectrix is completely uniform in most specimens of nominate *tenuirostris*, the exception being three specimens from Cajamarca, that all show a very slight dusky wash on this feather. These three specimens also show more extensive dark markings in the wings and on the penultimate rectrix than specimens from further south. One of them almost matches *kalimayae* in wing-pattern, and they are all intermediate in size with more southerly birds.

Distribution. So far only known from the western side of Planadas de Guintza, where 3 or 4 pairs were easily observed (during strong winds) on 7 and 9 August 1990, at elevations ranging from 3350 to 3500 m. Two subsequent searches for the species at the same site on 17 October 1990 and 3 January 1991 proved negative, either because there was no wind and the birds thus preferred to walk away, or because the birds were elsewhere at the time. Searches in apparently suitable habitat on 18 August 1990 along the Ambato-Guaranda road on the north slope of Volcán Chimborazo, and 3 January 1991 along the Latacunga-Zumbahua road likewise proved negative, although the species may occur at these latter sites in such low density as to go undetected. The low and humid páramos of southern Ecuador presently form an effective barrier between the ranges of *tenuirostris* and *kalimayae*.

Etymology. I take pleasure in naming this bird after my at the time 4-year-old daughter Kalimaya, whose presence during the second visit to the type-locality may have prevented attacks by the local indians.

Habitat. On 7 and 9 August 1990 the type locality was very windy, and dust and sand from Planadas de Guintza, a pumice flat, had accumulated as dunes in places just behind the ridges of the hills to the west and northwest of the plain. The higher ridges had bunch grass (that was being burnt at the time), but at the pass there were fields with potato and *Rumex acetosella* as well as large areas matted with *Lachemilla*. The miners were seen on the matted slopes, and on the fields and bare patches. Here they shared the habitat with *Metriopelia melanoptera*, *Muscisaxicola maculirostris*, *Anthus bogotensis* and *Phrygilus unicolor*, all widespread, but confined to the high Andes. In bunch grass areas nearby *Asthenes wyatti* was noted, and in a row of bushes growing up the slope *Turdus fuscater*, *Diglossa humeralis* and *Zonotrichia capensis* occurred, also all widespread high Andean taxa.

Natural history. Typically for the species, it was found in pairs, flew high and far when flushed, and was fairly shy. Some singing was heard while the birds were swooping low over the slopes. Normally it rises to considerable heights during the nuptial flight, but this may have been inhibited by the strong winds. Calls were given by all birds, both during take-off and upon and just after landing. Three or four pairs were seen in two areas with altogether 1 km^2 of suitable habitat. The only known nest of the species was in a hole in a bank (Salvador *et al*. 1984), but it was not known whether it was dug by the bird itself, or by a *Notiochelidon cyanoleuca* or an earthcreeper (*Upucerthia*) (T. Narosky, pers. comm.). Although it was neither found at the type-locality of *G. t. kalimayae* nor recorded on the adjacent slope of Volcán Iliniza, *Cinclodes excelsior*, which digs its own tunnels, is common on the nearby mountains Corazón, Cotopaxi and Chimborazo.

Acknowledgements

For good companionship in the field I thank J. Live, P. Prado, and M. Yacelga (first visit), A. Holst and K. Krabbe (second visit), and Fernando and Francisco Sornoza (third visit). The field work was generously funded by H.K.H. Kronprins Frederiks Fond and Dr. Bøje Benzons Fond, Zoological Museum of Copenhagen. I am grateful to J. V. Remsen, Louisiana State University, for sending me the weights of their specimens, and to E. R. Blake, Field Museum of Natural History, Chicago, for loans of their specimens. J. Fjeldså kindly commented on the manuscript.

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Notes on distribution and natural history of some poorly known Ecuadorean birds

by Niels Krabbe

Received 15 August 1991

From July 1990 to May 1991, during my first of four years of ornithological field work in Ecuador, work primarily aimed at mapping the distribution of high Andean birds, several observations worth publishing separately from the main report were made. Some of these are described below. Specimens are deposited in Museo Ecuatoriano de Ciencias Naturales (MECN), Quito, Zoological Museum University of Copenhagen (ZMUC), and Academy of Natural Sciences, Philadelphia (ANSP). Tape-recordings are deposited at the British Library of Natural Sounds, London, and Bioakustisk Laboratorium, University of Århus, Denmark.

NOBLE SNIPE *Gallinago nobilis*

Noble Snipe were recorded on Páramo El Angel on two occasions in December 1990 (and one bird collected for identification), and on the páramo south of Volcán Cotopaxi in Janury 1991. The vocalizations heard from the rush beds in Laguna del Limpio on Volcán Cotopaxi on 9 October 1983 at a site where several Noble Snipe had just landed, were in fact partly referable to the song of a Lesser Rail *Rallus limicola aequatorialis*, and partly to what seems to be a call given from the ground by the (female ?) Noble Snipe, and was not, as believed then, a lek song of the Noble Snipe (*contra* Fjeldså & Krabbe 1990: 178). A winnowing resembling that of the Common Snipe *Gallinago gallinago* was emitted by Noble Snipe during roding in wide circles at dusk and early dawn. M. Hall informs me (verbally 1991) that in moonlight it may rode during most of the night. Synchronous with the winnowing, a loud chipping, much like that given by *G. gallinago* and *G. jamesoni*, was given from the ground, presumably by the female Noble Snipe. The only other vocalization recorded from the Noble Snipe was the rasping call invariably given upon take-off, both day and night.

IMPERIAL SNIPE *Gallinago imperialis*

Two roding birds were tape-recorded and seen on the west slope of Loma Yanayacu on the north slope of Volcán Pichincha at dusk (18.25–19.00) on 17 and 19 December 1990, and (one bird only) again on 10

January and 17 March 1991. The bird perched for 10–60 s between the nuptial flights, and once the perch was seen to be a thick branch of a *Polylepis* tree 3 m above the ground. The distance between the perches used was some 500 m, and the perches roughly formed a 700 m diameter circle. The chachalaca-like song was given continuously during the direct flight between the trees and became slow grunts while the bird was perched. The song was sometimes terminated with a short (5–10 m), almost vertical dive in the middle of the territory, and a simultaneous rush of air could be heard. Roding was noted in clear weather as well as in fog and heavy rain. The elevation was 3600 to 3700 m, the highest recorded for the species, which was hitherto known from 2750 to 3500 m at five localities in Peru and two "Bogotá" specimens of unknown origin. An undocumented sighting (D. Platt 1988: Bird-list for Cajanuma, unpublished) is from Parque Nacional Podocarpus, Loja, southeastern Ecuador, from where there is also a sighting of a roding bird by M. Pearman at dusk and dawn in December 1990 (M. Pearman *in litt.* 1991). The bird's barred back was seen well on the perch, its broad-winged, short-tailed, woodcock-like silhouette in flight, and on the basis of the tape-recordings the identification was further verified by T. A. Parker, who is familiar with the song from Peru. The species' nocturnal habits and inaccessible habitat may explain the paucity of records, and it may in fact inhabit most humid forest/humid páramo ecotones in the tropical Andes.

ANDEAN POTOO *Nyctibius maculosus*

A mating pair of this poorly known species was observed, and the song and calls tape-recorded, on an occasionally moonlit night in wet forest in Cordillera de Huacamayos in southern Napo province, at an elevation of 2100 m, on 2 September 1990. The male used three song posts some 700 m apart, and sang every 8 to 10 s (song described in Schulenberg *et al.* 1984) between showers of rain, for 2–3 minutes at a time, throughout the night. On two occasions a different call (presumably given by the female) lasting 2–3 s and of three short, slightly descending notes was heard, whereupon the female landed on one of the male's empty song posts. Within seconds the male arrived, and a short mating followed. Although distributed in the Andes from Venezuela to Bolivia, there are few records of the species, which remains virtually unknown.

VIRIDIAN METALTAIL *Metallura williami*

One was seen and another netted and a blood sample taken before the bird's release, at 00°39′N, 77°34′W on Páramo El Angel, 3350 m, Carchi province, on 14 November 1990. These represent the first records from the western Andes of Ecuador.

STREAK-CAPPED TREEHUNTER *Thripadectes virgaticeps*

One was collected 9 km west of Piñas, El Oro province, *c.* 900 m, on 14 April 1991. The species was not recorded here by Robbins & Ridgely (1991), who reported the Uniform Treehunter *T. ignobilis* fairly common at this site. Previous records from western Ecuador are from western Carchi province (specimen in MECN) and from Pichincha province (Chapman 1926), the latter being some 400 km to the north of the El Oro site.

WATKINS' ANTPITTA *Grallaria watkinsi*

Although correctly described as a full species (Chapman 1919), *G. watkinsi* was treated as a subspecies of *G. ruficapilla* by Peters (1951). As already discovered in January 1988 by Paul Greenfield (pers. comm. 1990) the song of *G. watkinsi* differs distinctly from that of *G. ruficapilla*, and on 6 February 1991 above Sozoranga at 1750 m, and on 13 April 1991 at Catacocha, both in Loja province, the two species were tape-recorded simultaneously, which proves sympatry. According to B. Best (pers. comm. 1991) both species can also be heard on the lower Pacific slope of Celica mts. At all three sites, however, *G. watkinsi* inhabits deciduous scrub and forest, and *G. ruficapilla* humid forest and scrub. At Catacocha a tongue of acacia-like scrub extended a little way into the humid forest, and the two species sang no more than 10 m apart. No intermediate song-types were heard at either locality. On 27 December 1990 *G. watkinsi* was seen and tape-recorded along Río Ayampe in the coastal range on the border of Manabí and Guayas provinces at an elevation of *c.* 20 m. This represents the first record from the coastal range. There are subsequent records and specimens (ANSP) from the same area at 400–750 m in the transition zone between dry and humid forest on Cerro San Sebastián (T. A. Parker and R. S. Ridgely *in litt.* 1991).

NARIÑO TAPACULO *Scytalopus vicinior*

This species, hitherto only known from 1600 to 1800 m at the type-locality in western Nariño, and from 1950 m on the Pacific slope in Valle, Colombia, was tape-recorded by P. Coopmans near Mindo, at 1700 m, on the northwestern slope of Volcán Pichincha in July 1990. Subsequently the author collected 10 specimens at the same site and an additional two specimens on the Pacific slope of Carchi province at an elevation of 2350 m (and also tape-recorded the species at 1800 m in Cordillera de Toisán in extreme western Imbabura province). Their vocalizations were matched by recordings (by D. Willis and F. Lambert) from the type-locality of *vicinior* (where only one species of *Scytalopus* was noted to be present). These were thought to represent the first recordings of the species' vocalizations. However, the tape-recordings of birds, some of which were collected, on the Pacific slope of Carchi province at 1650 to 1775 m in August 1988 (by M. Robbins) also prove to be of this species. My detailed studies in 1990–91 show that Ecuadorean highland birds treated under Nariño Tapaculo by Fjeldså & Krabbe (1990: 432, sonagrams from Pichincha) are referable to the Brown-rumped Tapaculo *Scytalopus latebricola spillmanni*, while most Ecuadorean birds treated by them under Brown-rumped Tapaculo, *spillmanni* group (p. 435–6, sonagrams from southeastern Ecuador) represent a new species soon to be described.

ANDEAN TAPACULO *Scytalopus magellanicus opacus*

Reliable records of the Andean Tapaculo in Ecuador are from the eastern Andes (Fjeldså & Krabbe 1990). Five males were collected at three localities on Páramo El Angel in western Carchi province at elevations ranging from 3400 to 3950 m, on 16 and 18 November 1990. The species was also heard singing on the Colombian side of the border. These represent the first records of the species in the western Andes.

BUFF-THROATED TODY-TYRANT *Hemitriccus rufigularis*

One was tape-recorded and collected (specimen in MECN, Quito) at 1300 m on a ridge crest 100 m above the Río Hollin road, *c.* 10 km from the turnoff from the Baeza-Tena road, on the southern slope of Cordillera de Guacamayos in southern Napo province on 2 September 1990. After playback of its call the bird was attracted and perched *c.* 8 m up in the lower canopy of tall trees on a ridgecrest in primary humid forest. Another was tape-recorded under very similar conditions at 1300 m on the northern flank of Pan de Azúcar, further north in Napo province, on 2 and 3 November 1990. These records extend the species' range some 300 km northwards, and it may range further north into Colombia. Previous Ecuadorean records are from 1300 m, east of Guadeloupe, on the western base of Cordillera de Cutucú in Morona-Santiago province, where two or more were seen and heard by R. S. Ridgely and R. A. Rowlett, and tape-recorded by the latter on 4 August 1979 (R. S. Ridgely *in litt.*), and from 1400 m, at Pachicutza, western slope of central Cordillera del Condor in Zamora-Chinchipe province, where one specimen (in WFVZ, Los Angeles) was collected by M. Marín on 27 July 1989 (R. S. Ridgely *in litt.*).

ORANGE-CRESTED FLYCATCHER *Myiophobus phoenicomitra*

In western Ecuador this species was hitherto only known south to Pichincha province (R. S. Ridgely *in litt.*). One was collected 9 km west of Piñas, El Oro province, at an elevation of 900 m, on 15 April 1991. The species was not recorded there by Robbins & Ridgely (1991). The record represents a 400 km southward range extension in western Ecuador.

SULPHUR-BELLIED TYRANNULET *Mecocerculus minor*

The species was previously known from scattered localities along the eastern slope of the Andes from Venezuela to central Peru. Two individuals, both first found and identified by J. Sterling, were tape-recorded and observed in outer leaves of young trees in a selectively logged humid forest on a ridgetop at 2500 m on the Pacific slope in Carchi province from 19 to 22 November 1990. One bird was collected (MECN), and does not differ from east Ecuadorean birds in plumage or vocalizations. Its calls include a slightly descending, somewhat nasal *week week week week*, lasting about 1 s and sometimes terminated with a slightly higher-pitched *week* after a short pause, as well as a more commonly heard, rapid *weeka* or *wedup* of a similar quality. This lack of differentiation as well as the previous lack of records from the western Andes suggest the crossing of the Andes to be a holocene event, perhaps even very recent, following the deforestation, as the species prefers young trees.

HIGHLAND ELAENIA *Elaenia obscura*

There are three unpublished specimens of this form in MCZ (nos. 329817-8-9), taken by D. Norton at Loja, 2150 m, Loja province on 27–28 July 1965 (R. S. Ridgely *in litt.*). One (MECN) was taken by the author at the edge of a small forest at 2300 m 1 km east of Cariamanga in southern Loja province on 9 April 1991.

CHIGUANCO THRUSH *Turdus chiguanco*

This species was known north to the vicinity of Riobamba, Chimborazo province (Fjeldså & Krabbe 1991). It was found to be fairly common and one specimen (ANSP) was taken on the slopes of Volcán Iliniza in western Cotopazi at 00°55′S, 78°43′W, 3200 m, on 3 January 1991. There are several recent sight records of a single bird at Tumbaco (*c* 2100 m) near Quito in 1989 and 1990 (P. Greenfield pers. comm.), where the species had not been recorded by the many observers visiting this locality previously, and it most likely represents a recent range extension into the Río Guayllabamba valley, which, according to locals, has been extensively deforested in this century.

BAND-TAILED SEEDEATER *Catamenia analis*

Two single birds were seen on the slope of Río Leones valley below Oña on the El Oro/Azuay border on 14 February 1991. Though its occurrence was suspected (R. S. Ridgely *in litt.*) there are no previously published records of the species from southern Ecuador. They appear to be of the subspecies *soderstromi* (with a conspicuous white wing-speculum and with primaries edged white), which is the form found in northern Ecuador.

ANDEAN SISKIN *Carduelis spinescens*

Although known from Páramo El Angel, Carchi province, since January 1982, when photographed by P. Greenfield (R. S. Ridgely *in litt.*), no specimens had been taken in Ecuador. One (now in MECN) was collected by the author on the same páramo at 00°43′N, 77°47′W, 3400 m, on 16 November 1990. It was the commonest bird there with *c.* 30 individuals observed near our camp.

SAFFRON SISKIN *Carduelis siemiradskii*

Two flocks, of 5 to 6 individuals, were observed and tape-recorded along Río Ayampe in the coastal range on the border of Manabí and Guayas provinces, at 01°40′S, 80°45′W, elevation *c.* 50 m, on 27 December 1990. In 1991 ANSP personnel found it fairly common here, mostly in deciduous woodland at 300–600 m, where one male (ANSP 183551) was taken on 18 January, less commonly up to 800 m in humid mossy forest on nearby Cerro Sebastián; they found the species most in evidence in January, and hardly singing in August (R. S. Ridgely *in litt.*). The species is known from very few localities, the nearest being Balzar mountains, Manabí province at *c.* 00°55′S, 79°55′W, where one was taken by Illingworth, a native collector in the service of C. Buckley, late last century (specimen in British Museum) and "Cemento Nacional", Guayas province, at 02°09′S, 80°02′W (several sightings since first seen here by R. S. Ridgely in July 1978: *in litt.* 1991).

Acknowledgements

For good assistance and companionship in the field I thank Jorge Live (Huacamayos), Milton Yacelga (Imbabura), Francisco and Fernando Sornoza M. (Cotopaxi), John Sterling (Carchi), Aspen Mayers (Carchi, Pichincha), Michael Kessler (Oña), Brinley and Amanda Best (Sozoranga), as well as Frank Lambert (Sozoranga, Pichincha), Chris Balchin, Jeff Blincow, Simon Cook, Nigel Goodgame and Steven Greenfield (Pichincha). I thank P. Greenfield, R. S. Ridgely, M. B. Robbins, B. Best, P. Coopmans, F. Lambert, J. Sterling and M. Hall for useful information, and J. Fjeldså for comments on the manuscript. I am grateful to the Museo de Ciencias Naturales, Quito, for support, and to Ministerio de Agricultura, Quito, for issuing the necessary permits. The work was generously funded by H. K. H. Kronprins Frederiks fond, and Dr. Bøje Benzons fond, Zoological Museum of Copenhagen, Denmark.

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Requiescat for *Tricholimnas conditicius*, a rail that never was

by Storrs L. Olson

Received 22 August 1991

An unfortunate number of birds were described from a single specimen only, never to be found again. A prevalent trend in ornithology has been to discount and ignore unique types, yet with proper evaluation of their morphology, in combination with careful review of the circumstances of their acquisition, the species founded on them can often be resurrected, adding to our knowledge of previous avian diversity (e.g. Olson 1986a,b, Graves & Olson 1987, James *et al*. 1989, Olson *et al*. 1989).

A discounted species consigned to oblivion for the past 40 years is the presumably flightless rail *Tricholimnas conditicius* Peters & Griscom, 1928. Recently, however, Walters (1987), on the basis of circumstantial historical evidence, concluded that this was a validly described species. To attempt to resolve the issue, I studied both the unique holotype and additional historical evidence, but with opposite result, as I have concluded that *T. conditicius* is not, in fact, a valid species.

Historical review

Much in the original description and subsequent assessment of *T. conditicius* has been marred by errors of judgement, interpretation, or procedure, beginning with the spelling of the species' name itself. There seems no justification for the orthography "*conditicius*", which is surely based on the Latin verb *condo*, hide (rather than the adjective *conditus*, meaning savory or seasoned), the actual word intended probably being *conditivus*, meaning laid away or preserved, which is certainly applicable to the holotype.

Peters & Griscom (1928) described *T. conditicius* from a specimen skinned from alcohol that had been found "in the Museum of Comparative Zoology [MCZ] after a period of long oblivion. With it was a label: 'Kingsmill Islands, 1861, Andrew Garrett, Collector' " (Greenway 1952: 1). Peters & Griscom (1928) established that Garrett had been on the island of Apaiang (=Abaiang) in the Kingsmill [=Gilbert] group in 1859, whence they assumed the rail had come, the date 1861 being surmised as that of the collection's receipt at the museum.

Peters & Griscom (1928:102) made no comparisons with *Tricholimnas lafresnayanus* of New Caledonia, the type of the genus, but only with Sclater's (1870) description and Mathews' (1928) plate of *T. sylvestris*, the flightless 'woodhen' of Lord Howe Island, a species of which they said "there is no material available in this country with which to make an actual physical comparison". This is curious because the MCZ possesses a complete skeleton of *T. sylvestris* (MCZ 363) that was purchased from E. Gerrard, Jr., and received 30 August 1878. It is still the only skeletal specimen of the species in any New World museum (Wood & Schnell 1986).

Rather than making comparisons with this skeleton, Peters & Griscom published notes made by G. M. Allen comparing the body skeleton of *T. conditicius* with that of a King Rail *Rallus elegans* (presumably MCZ 3316, the trunk of a specimen collected in 1921, the only skeletal material of *R. elegans* in the MCZ collections). Why did Allen not compare the skeleton of *T. conditicius* with the specimen of *T. sylvestris* that had then been at Harvard for nearly 50 years? One possibility is that the latter was received in alcohol and was not prepared as a skeleton until after 1928. On the other hand, given the priorities of the day, it is more likely that an alcoholic specimen, unless badly damaged (and the skeleton is in excellent condition), would have been prepared as a skin. The failure of Peters, Griscom, or Allen to consult the MCZ specimen of *T. sylvestris*, whatever its manner of preservation in 1928, is an oversight that cannot now be explained.

The body skeleton of the unique holotype of *T. conditicius*, incredible as it may seem, was not saved; at least it can no longer be found in the MCZ collections. Likewise, the stomach contents of the specimen ("seeds of two species, the chitinous shell of a small beetle, and an entire harvest fly"; Allen in Griscom & Peters 1928: 103) were also evidently discarded, although, as noted by Walters (1987), these might have helped to determine the geographical origin of the bird. Harvest fly is another term for a cicada (Homoptera) and cicadas are found on Lord Howe Island and in the Marshalls and Gilberts (R. Froeschner, pers comm.), so this fact does not help to resolve the origin of the specimen.

Greenway (1952) discovered an unpublished communication from Garrett stating that on Apaiang: "There is only one species of land bird and this I never saw but obtained one of its tail feathers which I send you. I think it is a species of Hawk.'' Greenway could not find this feather but hypothesized that because migrant hawks had been reported from Palau, such a stray may have reached Apaiang. Amerson (1969: 229) has more plausibly suggested that this feather likely came from the widespread migrant cuckoo *Urodynamis taitensis*. Regardless, Garrett's note provides conclusive evidence that the rail in question was not obtained on Apaiang.

Greenway (1952) compared the type of *T. conditicius* with a series of *T. sylvestris* and found no differences other than slightly smaller size, which he attributed to immaturity, as Allen had stated that the skeleton indicated the specimen was obviously an immature. Greenway (p. 3) considered that ''the weight of evidence points to [the type of *T. conditicius*] having come from Lord Howe Id. It is probable that it found its way into Andrew Garrett's collection by an exchange, or perhaps through the good offices of a whaling friend.'' Greenway regarded *T. conditicius* as a probable synonym of *T. sylvestris*, and the species accordingly sank into oblivion.

Recently, however, Walters (1987) revived the issue by reviewing Garrett's itinerary and suggesting that the type of *T. conditicius* could have been obtained on the island of Ebon in the southern Marshall group, where Garrett also landed. Although he did not examine the specimen, his review of documentary evidence led him to conclude that *T. conditicius* was a validly described species.

The specimen evidence

I examined the holotype of *Tricholimnas conditicius* (MCZ 21943) and made comparisons directly with two specimens of *T. sylvestris* lent for the purpose (AMNH 545298, 545345). I later compared the entire large series of *T. sylvestris* at the American Museum of Natural History with colour photographs of the type of *T. conditicius*. The latter was diagnosed as being ''similar to *Tricholimnas sylvestris* of Lord Howe Island but much smaller; wing coverts less conspicuously chestnut'' (Peters & Griscom 1928: 102), but I could find absolutely no consistent differences in plumage. The size is small, and the proportions of the bill are somewhat different from adults of *T. sylvestris*, but are almost exactly duplicated by two immature birds of that species (AMNH 545297, 545318).

One possible character that has never been mentioned is that the feet in the type of *T. conditicius* are orangish in colour whereas in most specimens of *T. sylvestris* they are a dark brownish leaden colour. There is some variation, however, and certain specimens have a more reddish or orangish cast to the feet. In one individual of *T. sylvestris* (AMNH 545363) the feet were distinctly orangish, just as in the type of *T. conditicius*. Interestingly, this specimen had also been prepared from spirits.

Thus, like Greenway, I was unable to find any morphological features by which *Tricholimnas conditicius* could be separated from *T. sylvestris*, at any level.

The evidence against a Micronesian origin for *T. conditicius*

To begin with, it is hardly conceivable that two flightless species could evolve independently on islands some 4500 km apart and show no morphological differentiation from one another. Secondly, Ebon atoll is nearly as poor a candidate to have been home to a large flightless rail in 1859 as was Apaiang. An overlooked early report on the natural history of Ebon is that of Rev. E. T. Doane (1861: 322), the ornithological portions of which are quoted here in full:

> This atoll is the home for a few varieties of birds. But in this feature of the island, the contrast is as wide between the "low coral" island and the "high volcanic" one—as between their natural features. The high islands of Micronesia are largely supplied with the feathery tribe,—but this atoll can claim only a few birds—and with two or three exceptions these are all water fowl. There are a few Columbidae, *Carpophaga* [*Ducula*] *oceanica*, which manage to elude the keen search of the natives. These birds are occasionally heard cooing away in the tops of some quite isolated bread-fruit tree. A Cuculus [doubtless *Urodynamis taitensis*] gives forth occasionally its sharp whistle—and these, with the addition of another land bird whose species I have not been able to learn—are all the feathery songsters this atoll can claim.
>
> The shores of the reef at low tide, and the bare rocks, are a little enlivened by the brown and white Heron. Small flocks of snipe (*Scolopax*) gather on the sand bars—or single individuals are running along the beach picking up food. An occasional plover (*Charadrius*) is to be seen. Sea swallows (*Sterna stolida* and *Sterna minuta*) are skimming the waters of the lagoon, or resting on the beach. A booby (*Lula* [*sic* = *Sula*]) now and then is seen sailing over the island. His home is unknown to the natives. His want of caution is clearly seen in the easy way a native will ascend a tree in which the bird is roosting, and with a slip-noose capture him. An interesting explanation of the origin of the single variety of the *Cuculus* is given by the natives—so skillful has this bird been in concealing its birthplace. As the natives find it only full grown they say that it is born and nourished in the clouds and falls to the earth of full size. [The Long-tailed Cuckoo is a migrant in Oceania that breeds only in New Zealand.]

This appears to be a reasonably accurate and perceptive report. The unknown land bird mentioned is almost certainly the fruit dove *Ptilinopus marshallianus* coincidentally described by Peters & Griscom (1928) in the same paper as *Tricholimnas conditicius* from a single specimen, still unique, obtained on Ebon by the missionary B. G. Snow in "the late fifties or early sixties of the last century", but not forwarded to the MCZ until 1876 (Barbour in Peters & Griscom 1928: 99). Doane's list adds considerably to the previously recorded native avifauna of Ebon, which according to Amerson (1969) consisted only of the *Ptilinopus* and the noddy *Anous tenuirostris*. The Reverends Doane and Pierson established a mission on Ebon in 1857 (U.S. Hydrographic Office, Bureau of

Navigation, 1870, Marshall Group, North Pacific Islands, 1:33 [original not seen]). Doane's report was communicated from Ebon on 16 August 1860 and thus covered the period of Garrett's visit in 1859. Had Garrett obtained a flightless rail on Ebon, either himself or through the missionaries, this fact would hardly have been unknown to Doane or have gone unmentioned by him.

Greenway (1952) assumed that Garrett obtained the type of *T. conditicius* from another source, who in turn had obtained it from Lord Howe Island. However, I believe that the nature of the man and the supposed timing of acquisition of the specimen militate against *any* association between Andrew Garrett and *T. conditicius*.

Greenway (1952), although acknowledging Garrett's genius as a scientist, in referring to him as a dealer may have given an impression of Garrett as an indiscriminate accumulator of natural history objects for commerce. Although Garrett certainly sold specimens to support his collecting activities, he was, in fact, a dedicated marine biologist who made many serious contributions to the scientific literature of fishes and marine invertebrates (Thomas 1979, Clench 1979). He had little personal interest in birds, however. We must ask, therefore, why Garrett would have been involved in an *exchange* for a specimen of bird that he never bothered to call to the attention of any ornithologist.

Garrett supposedly obtained the type of *T. conditicius* about 1850 and certainly prior to 1861—fully a decade before specimens of the Lord Howe Island woodhen, *T. sylvestris*, were obtained and formally described (see Bennett 1870, Sclater 1870). In reviewing some of the literature on the natural history of Lord Howe Island, it would appear that most, if not all, traffic in natural history specimens from Lord Howe was through naturalists in London via Sydney (e.g. Hindwood 1940, Iredale 1940). It makes no sense that Garrett, based then in Hawaii, could have obtained, during or shortly after his collecting trip to the Gilberts in 1859, a specimen of a bird from Lord Howe Island ten years before an example of the same species reached London.

I conclude that the entire problem is probably traceable to an early curatorial error at the MCZ in which a fluid-preserved specimen of *Tricholimnas sylvestris* from Lord Howe Island was wrongly associated with an old label from one of Garrett's collections. In this connection it is worth noting that other early specimens of *T. sylvestris* were originally supplied in spirits. I have already alluded to the MCZ skeleton possibly having been originally in alcohol. Likewise there are three dataless skins from the Rothschild collection that are marked as having been prepared "from spirits" (AMNH 545363-5).

In summary, all available morphological and historical evidence points to the type of *Tricholimnas conditicius* Peters & Griscom, 1928, being The former name should thus fall back into synonymy.

Acknowledgements

For access to the holotype of *T. conditicius* and other specimens at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, I continue to be indebted to Raymond A. Paynter, Jr. I am also grateful to the American Museum of Natural History, New York, especially Mrs Mary LeCroy, for access to and lending of specimens. Comparisons were facilitated by colour photographs supplied by Beth Miles and

Richard Flint. Ms Mary S. McCutcheon kindly supplied information on Ebon from the Biogeography Files at the National Museum of Natural History, Smithsonian Institution. Richard Froeschner (Dept. of Entomology, National Museum of Natural History, Smithsonian Institution) checked on the distribution of cicadas in the Pacific. For comments on the manuscript I thank Helen F. James.

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Distribution of *Centropus viridis* in the Babuyan Islands, northern Philippines

by Charles A. Ross & Tomas R. Ramos

Received 24 August 1991

Few ornithological collections have been made in the Babuyan Islands. Whitehead collected briefly on Fuga in 1895 while being waylaid en route to Cape Engaño, Luzon (Ogilvie Grant 1896). Mearns collected 30 specimens on 29–30 May 1907 (data from Mearns field notes on file at USNM) including two *Centropus*, a *C. viridis major* (USNM 201860) and a *C. bengalensis* (USNM 201872). The largest historic collections from these islands, made by McGregor (1904, 1905, 1906, 1907, 1910), were largely destroyed during the Second World War, except for a few specimens distributed to institutions outside the Philippines (Sibley 1946).

Parkes & Niles (1988) described *Centropus viridis major* from 5 specimens collected by Tomas and Jacinto Ramos on Fuga Island, Babuyan Island Group, north of Luzon. This taxon differs from *C. v. viridis*, found throughout most of the Philippine islands, by larger size and from *C. v. carpenteri* (endemic to Batan Island north of the Babuyan Island Group) and the smaller *C. v. mindorensis* (endemic to Mindoro Island west of central Luzon), by its chestnut wings.

Additional specimens of *C. v. major* collected by the faunal inventory program of the National Museum of the Philippines in collaboration with the National Museum of Natural History, Smithsonian Institution, in the northern Philippines provide new information on the distribution of this poorly known race in the Babuyan Islands.

In 1989 and 1990 we made ornithological collections on 4 of the 5 main Babuyan Islands (Camiguin Norte, Fuga, Dalupiri, and Calayan) and two small satellite islands west of Fuga (Maybag and Barit). Specimens of *Centropus viridis* from Camiguin Norte (1 ♀), Dalupiri (1 ♂, 1 ♀), and Calayan (1 ♂, 2 ♀) were measured using vernier calipers (bill length from the midsagittal frontal-nasal suture, determined by feel, to the bill tip) and a steel metal ruler (wing chord) and compared with material in the National Museum of Natural History, Smithsonian Institution, collection (USNM).

The 6 specimens agree with *C. v. viridis* in coloration being "dull black glossed with green, except for wings, which are bright chestnut" (duPont 1971). The specimen from Camiguin Norte, a female, is also similar in size to *C. v. viridis* with a wing chord of 162 and tail length of 245 mm versus female Luzon coucals where mean wing chord is 162.3 ± 5.57 ($n=12$) and mean tail length 252.1 ± 12.23 ($n=11$) (data from Table 1, Parkes & Niles 1988).

On the other hand, our specimens from Dalupiri and Calayan islands are larger than *C. v. viridis* with mean male wing chord 165 (range 163–168) and tail length 233 (range 223–244) ($n=2$), and mean female wing chord 179 (range 175–181) and tail length 269 (range 251–281) ($n=3$); and we feel referable to *C. v. major*. The size differences of these taxa are reflected in their weights (Table 1).

TABLE 1
Weights (g) of *Centropus viridis* from the northern Philippines

Island or Luzon Province	Sex ♂	♀
Pampanga Prov.	104	—
Cagayan Prov.	110, 126	142
Camiguin Norte	—	158
Dalupiri	169	223
Calayan	155	212, 219
Batan	145, 153	179, 200, 204, 209, 253

Our knowledge of the distribution and systematics of avian species in the northern Philippines is incomplete and hampered by the lack of adequate extant collections. Types of several taxa named by McGregor no longer exist, and without topotypic material racial affinities of some insular bird populations will remain obscured. Taxa endemic to one or two of these islands have been supposed to be widespread throughout the group. However, as seen from the distribution of *C. viridis*, this supposition may be in error and additional collections are warranted.

Acknowledgements

We wish to thank the staff of the National Museum of the Philippines, Silliman University, and Taggart Corporation; R. S. Kennedy, R. W. Dickerman, R. I. Crombie, and our friends in the northern Philippines, who facilitated our work and assisted in collection of specimens. We are especially grateful to A. and L. Lim for facilitating and allowing us to collect on Fuga, Barit and Maybag islands, and F. Hermanos for permission to make collections on Dalupiri Island. Partial support for this work was provided by the Research Opportunities Fund of the Smithsonian Institution and Mocatta Corporation for which we thank S. Shetler and H. Jarecki, respectively. Storrs L. Olson (USNM) read a preliminary draft of this paper and we appreciate his helpful comments.

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Sexual dimorphism in the juvenile plumage of the Courol *Leptosomus discolor* and considerations on its affinities

by M. Herremans & M. Louette

Received 31 August 1991

The Courol or Cuckoo-roller is endemic to Madagascar and all four Comoro Islands (Grand Comoro, Moheli, Anjouan, Mayotte). Although a common species, nothing of its breeding habits was known until the description of nest histories by Forbes-Watson (1967) and Appert (1968). These authors also presented a description of the nestlings, but their sexual dimorphism remained undescribed. However, Appert indicated that in Madagascar males and females could be recognized at the moment of fledging, but without detailing any distinctive feature. Benson *et al.* (1976) mentioned that juvenile males (sexed by dissection) were in female dress, and Langrand (1990) says that immatures differ from the female by generally drabber plumage. That the adult male has a non-breeding dress, similar to the female's, as stated by Milon *et al.* (1973), is refuted by our observations on moult in many specimens.

At variance with the statements by Benson (1960) and Forbes-Watson (1967) that Courols are not molested by the Comorian people, a box with two young taken from a nest was obtained from children at Moroni, Grand Comoro, on 30 November 1989. The birds were well-feathered and probably already some four weeks old. We kept them in our house for another ten days until the older flew off unexpectedly; the younger was released shortly afterwards. The normal prey is chameleons and large insects, but, except for some insects, we fed offal of poultry and fish, corned beef and occasionally *Mabuya* lizards. Each of the young grew 28 g over the first seven days with us, to 216 and 228 g, respectively. These are high figures since an adult male and female from this small Grand Comoro subspecies *gracilis* weighed only 160 and 196 g respectively (pers. obs.); recorded weights of adult males of the decidedly larger nominate race are 219, 222, 205, 192 and 205 g (Benson *et al.* 1976; pers. obs.). A female from the subspecies *intermedius*, endemic to Anjouan, was still heavier (270 g), but might have been in pre-laying condition (pers. obs.).

There was a prominent dimorphism in the juvenile plumage, which we believe to be sexual (the birds were not sexed internally and sexing on the blood samples taken from both failed in the laboratory, so we cannot be certain). The smaller ('male') bird had the mantle feathers and all wing coverts dark grey with a suffused metallic green-blue-purple gloss towards the rusty tips and on the outer webs. The remiges were dark grey with clear gloss on the outer webs. The larger ('female') bird had no gloss, and the rusty parts on the mantle and wing coverts were much more extensive, giving her in profile a more uniform rufous colour in contrast to the rusty on dark grey speckled aspect of the other bird. The outer webs of the remiges had a broad rufous band in the 'female', and no gloss. The rectrices had a dark subterminal band in the 'male', but were more uniformly bright rufous in the 'female'. The rear end of the cap was darker grey and less barred in the 'male'. The adult male's facial pattern of a black eye stripe and a black band across the head between the eyes (see, e.g., photo in Appert 1968) was already indicated in the 'male', but absent in the 'female'. The 'male' also had more whitish underparts, the 'female' more buffish, corresponding to the dimorphism in the adult. In general, the 'female' juvenile plumage closely resembled the adult female plumage. On the other hand, the greyer upperparts and whiter underparts, the facial pattern, and the presence of gloss on the plumage are all features of the adult male which are already apparent in the juvenile. A fledged juvenile male from Moheli (KMMA no. 83-43-A-798), where the nominate race occurs, is more pale grey-brown on the back, but otherwise follows the patterns described above in the juvenile 'male' of the race *gracilis* from Grand Comoro. Sexual dimorphism in the juvenile plumage is likely to be restricted to the facial mask in the race *intermedius*, because in this peculiar race the adult females also have extensive gloss, making them an example of the insular evolutionary trend towards reduced sexual dimorphism (Herremans 1990). The mention of gloss by Forbes-Watson (1967) in nominate birds from Mayotte, indicates that both of the nestlings in the nest which he found were males.

We agree with Forbes-Watson on the curious threat-behaviour of the young (also described by Appert 1968), and on the nasty smell of the birds and of their peculiar dark liquid excreta. Appert even mentions the smell before the presence of young in the nest.

Originally, this species was considered to be a cuckoo, having been described as a species of *Cuculus*. Sclater (1865) found it differed from cuckoos in the form of the nostrils, in the presence of an auxiliary plume on the body-feathers and in having 12 rectrices, and suggested it was close to the Coraciidae, although he admitted osteological differences. Verheyen (1955) found certain resemblances to the Coraciidae, but also differences including, apart from "osteometrical" ones, differences in pterylography, myology and the structure of the syrinx and the carotides. Based on morphology of the skeleton (Cracraft 1971) and on limb myology (Maurer & Raikow 1981, comparing with other Coraciiformes only), the Courol is nowadays usually placed in its own monotypic family, close to the rollers Coraciidae and ground-rollers Brachypteraciidae in the Coraciiformes. Burton (1984), studying the feeding apparatus, also classified *Leptosomus* as a monotypic family in the Coraciiformes, but found it "harder to understand the significance of all its distinctive features" and remarked on resemblances to the Galbuloidea. DNA-comparison was only performed on a limited scale and therefore, not surprisingly, left this bird in the Coraciiformes as a monotypic superfamily (Sibley & Ahlquist 1990; see also their discussion of differences of opinion about the composition of the order Coraciiformes).

Aspects of its behaviour, e.g. the threat behaviour of young in the nest (Forbes-Watson 1967), are very different from what is known in the European Roller *Coracias garrulus* (Glutz von Blotzheim & Bauer 1980); and the loud and whistling vocalizations (Herremans 1988) also suggest that the affinities with the Coraciidae may be not very close. Very little in the life-history of the Courol would suggest affinities to the ground-rollers. Only limited sexual dimorphism in the nestling plumage is known among the Coraciiformes (e.g. in some larger Alcedinidae), and none whatsoever in the Coraciidae and Brachypteraciidae, but it is frequent in some groups of zygodactylous birds (e.g. Picidae; Verheyen 1957 considered sexual dimorphism in their juvenile plumage to be an apomorph feature!), and it also occurs in some Cuculidae. The situation of the brown phase found among the nestlings of the Diederik Cuckoo *Chrysococcyx caprius* comes very close to the one found in the Courol; such a phase could become genetically linked to females (as indeed is the case for a small percentage—the hepatic phase—in the adult Cuckoo *Cuculus canorus*). In the Koel *Eudynamys scolopaceus* there is actually sexual dimorphism in the nestling.

We stress that our nestlings of *Leptosomus* perched definitely in zygodactylous manner under all conditions. According to Sclater (1865), however, its feet are not zygodactylous to the same extent as, e.g., in Cuculidae. We question that zygodactyly would be apomorphic in the Courol (*contra* Cracraft 1971 and Maurer & Raikow 1981, who also suppose this to be the case for other traits such as syrinx morphology). Instead, zygodactyly and sexual dimorphism (including the nestling plumage) might well be plesiomorphic in the Courol.

The habit of nesting in holes is of course not a feature of the Cuculidae, but rather fits the 'Coraciiformes' and Piciformes. Nevertheless, we would not be surprised if the Courol's true affinities were not too far from the Cuculiformes, something that should be tested with biochemical methods.

Acknowledgements

Activities on Grand Comoro were sponsored by the ICBP project 22/KM/3. D. Vangeluwe acquired the birds by excellent diplomacy and he also shared parental care over the birds, together with D. Meirte and D. Tonnoeyr.

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Towards stabilizing the nomenclature of Australian birds: neotypification of *Myzomela sanguinolenta* (Latham, 1801), *Microeca fascinans* (Latham, 1801) and *Microeca leucophaea* (Latham, 1801)

by Richard Schodde

Received 3 September 1991

Recently, McAllan (1990) questioned the application of established scientific names for two well-known Australian oscines, namely *Myzomela sanguinolenta* (Latham, 1801) for the Scarlet Honeyeater, and *Microeca fascinans* (Latham, 1801) and *M. leucophaea* (Latham, 1801) for the Jacky Winter. These names are not typified by identifiable specimens; their types, evidently discarded at the time of drawing, are represented instead by paintings or sketches in extensive series of late 18th Century illustrations of animals and plants from central coastal New South Wales and Norfolk Island. The largest of the series, known as the Watling drawings after a principal illustrator, was brought together by Surgeon-General John White in the first decade of Australian settlement (1788-1795) and is now preserved in the British Museum (Natural History) (Sharpe 1906, Sawyer 1949, Hindwood 1970, Smith & Wheeler 1988).

Through A. B. Lambert, John Latham examined the drawings, made copies of them, and on them based the many new nominal species of Australian birds that he described in the supplements to his General Synopsis of Birds and Index Ornithologicus (Latham 1801a,b). *Certhia sanguinolenta* Latham (=*Myzomela sanguinolenta*), *Loxia fascinans* Latham (=*Microeca fascinans*) and *Sylvia leucophaea* Latham (=*Microeca leucophaea*) were among them. With the phrase 'generally assumed', McAllan (1990) introduced an element of uncertainty about the connection between the drawings and Latham's new bird names. The link, nevertheless, is established by a manuscript in Latham's hand in the British Museum (photocopy in CSIRO Division of Wildlife and Ecology, Canberra, Australia). In it the drawings are indexed by their original number to the species name and page in Latham's (1801a) second supplement to his Synopsis of Birds (also Strickland 1843).

McAllan (1990) rejected as unidentifiable the Watling and Lambert figures representing *Certhia sanguinolenta* Latham, *Loxia fascinans* Latham and *Sylvia leucophaea* Latham, and adopted the next available junior synonyms as the valid names for the two species involved. The names introduced for them, *Myzomela dibapha* (Latham, 1801) and *Microeca macroptera* (Vigors & Horsfield, 1827), have hardly been used in the Australian literature since the 1850s. Such a course, unfortunately, sets a precedent for destabilising nomenclature. Many, if not most, 18th Century avian illustrations—and nominal taxa based on them—are flawed with inaccuracies of tone and markings which can be invoked to render them indeterminable. There is, however, an alternative solution that secures established usage: neotypification with specimens of the taxa to which the names in question have traditionally been applied. For the species involved here, it is a course advocated by the Taxonomic Advisory Committee of the Royal Australasian Ornithologists Union (R.A.O.U.), in accordance with Recommendation 75a of the International Code of Zoological Nomenclature (I.C.Z.N. 1985), with the following results.

At the crux of the case for rejecting *sanguinolenta* Latham, *fascinans* Latham and *leucophaea* Latham are the drawings on which they are founded. Here the arguments put forward by McAllan (1990) are at their weakest because he examined none of the original figures, checked only black-and-white reproductions of *sanguinolenta* and *leucophaea*, and relied largely on Mathews (1923a,b, 1927) for their identity and that of *fascinans*. As has been stressed elsewhere (Schodde 1978, Schodde & Mason 1980, Mason 1982), Mathews was susceptible to misinterpreting and misrepresenting the illustrations and descriptions of 18th and 19th Century ornithologists. Accordingly, the figures on which the above three names are based are reanalysed here, their recatalogued numbers in the British Museum being given in parenthesis (after Smith & Wheeler 1988).

1. Watling drawing no. 109 (188), *Certhia sanguinolenta* Latham. An accurate colour transparency of this drawing is held by CSIRO Division of Wildlife and Ecology, Canberra, as part of a complete photographic set of the Watling drawings in colour. It depicts a bird with a short curved bill opened to reveal a fimbriate meliphagid tongue, an extensively scarlet dorsum identical in colouring to an adult male Scarlet Honeyeater, and a whitish throat and dusky brown belly much as is found in female Scarlet Honeyeaters. Although it matches no known species, its tongue and red pigmentation can represent only a *Myzomela*. Among the species of that genus, moreover, it resembles the Scarlet Honeyeater most closely, either as a freak plumage, or as a post-fledging male moulting into adult plumage, or as a composite of male and female plumages. Hindwood (1970) agreed with this identification in his analysis of the Watling drawings. What is self-evident, given that the source of drawing 109 was central coastal New South Wales (cf. Latham 1801a, b), is that the Scarlet Honeyeater is the main if not only species involved in its formulation.

2. Lambert drawing, vol. I, pl. 58, *Loxia fascinans* Latham. This crude sketch is one of the few early drawings of Australian birds that A. B. Lambert passed on to Latham outside the

Watling set (Mathews 1923b; cf. the Latham handwritten index to the Watling drawings in BMNH quoted above). Unfortunately, McAllan (1990) appears to have overlooked its reproduction by Mathews (1936) on plate 74 in the supplement to his *The Birds of Norfolk and Lord Howe Islands*. The two-tone figure there shows a plain dark dorsum and wings, a contrasting white ventral surface, a dark tail with the outer two pairs of rectrices evidently white, arboreal habit, rather weak feet, and finch-like bill; Latham's accompanying descriptions (1801a,b) record the bill and feet as dusky. Finch-like bill apart, the only Australasian oscine that comes close to matching both drawing and description is the Jacky Winter, an eopsaltriid flycatcher. To link the figure to the Red-browed Finch *Neochmia temporalis* (Latham) instead, as Mathews (1923b) did with his reference to Watling drawing 168, is misleading. Even its thick bill is not so different from the stubby bill of the Jacky Winter; the disparity is mainly in its size in proportion to the rest of the head and body. In summary, then, the only species that may reasonably be associated with the drawing, given its crudeness and Australian source, is the Jacky Winter (also Gould in Strickland 1843; cf. Gray 1843, Mathews 1923b).

3. Watling drawing 201 (276), *Sylvia leucophaea* Latham. A transparency in colour from the Watling set at CSIRO Division of Wildlife and Ecology, Canberra, and reproduced by Calaby in Smith & Wheeler (1988), shows a slender, buff-brown oscine marked with a bar of white at the base of the remiges and along the outer rectrices. Not only in tones and markings but also shape, stance and extremities—it is depicted with a fine bill and long feet on the ground—it matches a member of the robin genus *Petroica*, not *Microeca*. It is closest to the Australian Flame Robin *Petroica phoenicea* Gould in immature or female plumage, despite lacking a narrow white bar on the forehead; in that plumage the white frons bar may be obscure or obsolete, particularly in young males. Hindwood (1970), nevertheless, associated the drawing with the Australian Rose Robin *Petroica rosea* Gould, an identification rejected by McAllan (1990) who suggested other Australian robins instead. Whatever its identity, all recent reviewers disagree with Mathews (1923b) that it is of a Jacky Winter.

Although it is probable that Watling drawing 109 represents a Scarlet Honeyeater, Lambert etching I.58 a Jacky Winter, and Watling drawing 201 one of the Australian species of *Petroica*, elements of doubt still attach to all three. Of the three, only the last, on which *Sylvia leucophaea* Latham is based, is a source of serious nomenclatural confusion and instability because it implicates both the Jacky Winter and species of *Petroica*. If applied to one of the likely species of *Petroica*—*phoenicea* Gould, 1837 or *rosea* Gould, 1840—*leucophaea* Latham, 1801 would preoccupy either of those long-standing names. Accordingly, the Taxonomic Advisory Committee of the R.A.O.U. has directed me, in the course of revisions for the Zoological Catalogue of Australia (Aves), to neotypify the following names with the following specimens:

1. *Certhia sanguinolenta* Latham, 1801—*neotype*, herein designated: ANWC 19198, adult male, in the Australian National Wildlife Collection, CSIRO, Canberra, from the approximate topotypical locality of Newington, Sydney = Port Jackson, New South Wales. This is a specimen of the species currently known in Australia as the Scarlet Honeyeater *Myzomela sanguinolenta* (Latham, 1801).

2. *Loxia fascinans* Latham, 1801—*neotype*, herein designated: AM 0.4175, adult male, in the Australian Museum, Sydney, from the approximate type locality of Hornsby, Sydney = Port Jackson, New South Wales. This is a specimen of the species currently known in Australia as the Jacky Winter *Microeca leucophaea* (Latham, 1801).

3. *Sylvia leucophaea* Latham, 1801—*neotype*, herein designated: AM 0.4175, that of *Loxia fascinans* Latham, above. By this action, *Sylvia*

leucophaea Latham becomes an objective synonym of *Loxia fascinans* Latham.

The nomenclatural consequences of these neotypifications need explanation. Now based undeniably on the same species, *Certhia sanguinolenta* Latham, *C. dibapha* Latham (based on Watling drawing 107 = 186 and 108 = 187) and *C. erythropygia* Latham (based on Watling drawing 120 = 198) become competing subjective synonyms; all three names were made available in the same publication (Latham 1801b). Here precedence was established by the first reviser, Gould (1843, June), who chose *Certhia sanguinolenta*, citing *C. dibapha* and *C. erythropygia* as subordinate synonyms. Although Strickland (1843, May) noted that *C. sanguinolenta* 'is probably' the female of *C. dibapha*, he selected neither over the other, cf. Article 24 of the International Code of Zoological Nomenclature (I.C.Z.N. 1985). Since the time of Gould, *sanguinolenta* Latham has been much the most widely used specific name for the Scarlet Honeyeater, not only in Australia (McAllan 1990) but also internationally (Salomonsen 1967, Wolters 1975–1982, Sibley & Monroe 1990); *dibapha* Latham has currency only in the small New Caledonian literature. Keeping *sanguinolenta* Latham as the senior available specific synonym for this species is thus supported by prevailing use as well as the provisions of the International Code of Zoological Nomenclature through neotypification.

The issue of the type species of the genus *Myzomela*, muddled by McAllan (1990) and others before him, is irrelevant to the application of *Certhia sanguinoleta* Latham. Vigors & Horsfield (1827) established *Myzomela* on a single nominal species: *Meliphaga cardinalis* (Gmelin) = *Certhia cardinalis* Gmelin. Scrutiny of their synonymy and account shows that their concept of that species *included* the Australian form now separated specifically as *sanguinolenta* Latham, so making an absurdity of imputations that "*Meliphaga cardinalis* Vigors and Horsfield, 1827" is a junior homonym of *Certhia cardinalis* Gmelin, 1788 (McAllan 1990). The type species of *Myzomela* is thus *Certhia cardinalis* Gmelin, as *Meliphaga cardinalis* (Gmelin); and its designation is either by original indication if Vigors and Horsfield's reference to "*Mel. cardinalis* being the normal species" can be accepted as such, or by monotypy.

Both *fascinans* Latham and *leucophaea* Latham have been used for the Jacky Winter within the last fifty years. The traditional *fascinans* was employed almost universally from the time of Gould (1865) until 1960 when, for the wrong reasons (McAllan 1990), a former Checklist Committee of the R.A.O.U. rejected it in favour of *leucophaea*. Since then, *leucophaea* has come into general use. Published simultaneously (Latham 1801b), both names become competing synonyms through neotypification here. As first reviser, Gould (in Strickland 1943) determined their precedence by choosing *fascinans* with the comment (p. 337): "*Loxia fascinans*, Lath. . . . must now be termed *Microeca fascinans* . . . *Sylvia leucophaea*, Lath., is *Microeca fascinans* (Lath.)". Aware of Gould's (1843, 1865) choice, the Taxonomic Advisory Committee of the R.A.O.U. recommended the present course of neotypification to effect suppression of *leucophaea* Latham as a junior objective synonym of *fascinans* Latham. The association of *leucophaea* with species of *Petroica* was considered a greater source of future confusion and instability than the temporary upheaval of returning *fascinans* to seniority for the Jacky Winter. *Microeca fascinans* (Latham) thus becomes its valid name. It can hardly be interpreted as an unused senior synonym under Article 79(c) of the International Code of Zoological Nomenclature (I.C.Z.N. 1985), having been in prevailing use until 1960 and being employed sporadically through the succeeding decade (e.g. Courtney 1967).

Postscript

The procedures employed here, regrettably, do not settle *Petroica phoenicea* Gould, 1837 as the valid name for the Australian Flame Robin. As Mathews (1913, 1920, 1946) pointed out, *phoenicea* Gould is probably preoccupied in *Petroica* by *Muscicapa chrysoptera* Quoy & Gaimard, 1830. This name has usually been interpreted as a junior subjective synonym of the Australian Pink Robin *Petroica rodinogaster* (Drapiez, 1819=1820), e.g. by the R.A.O.U. Checklist Committee (1926) and Wolters (1975–1982). Indeed, Mathews himself was confused, referring it to the synonymy of *rodinogaster* Drapiez on several occasions (e.g. Mathews 1922, 1930).

Nevertheless, both the original description of *Muscicapa chrysoptera* and its illustration as Figure 2 on Plate 4 of *Oiseaux* in the *Atlas, Zoologie*, of the Voyage of the Astrolabe (Dumont d'Urville 1833) are consistent with a juvenile male or female plumaged Flame Robin. It has extensively white outermost rectrices, twin buff remex stripes, plain face and frons, and pale grey-brown breast grading to a whitish abdomen. Until the holotype is found and checked in the Muséum National d'Histoire Naturelle, Paris, it seems prudent to treat the name as a *nomen dubium* without taking further action. If the holotype proves to be a Flame Robin, the Taxonomic Advisory Commitee of the R.A.O.U. anticipates requesting the International Commission on Zoological Nomenclature, through the Standing Committee on Ornithological Nomenclature of the International Ornithological Committee, to use its plenary powers to either suppress *Muscicapa chrysoptera* Quoy & Gaimard, 1830, as an unused senior synonym, or to set aside its existing type material and designate a neotype identifiable with *Petroica rodinogaster* (Drapiez). Only Mathews (11. cc.) appears to have used *chrysoptera* Quoy & Gaimard for the Flame Robin since its description.

Acknowledgements

In compiling this review, I have been assisted greatly by advice and guidance from the Taxonomic Advisory Committee of the R.A.O.U. and from Professors W. J. Bock and W. D. L. Ride, both members of the International Commission on Zoological Nomenclature.

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New information on the *Nesospiza* buntings at Inaccessible Island, Tristan da Cunha, and notes on their conservation

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Received 13 September 1991

Tristan and Wilkins' Buntings *Nesospiza acunhae* and *N. wilkinsi* are endemic to Inaccessible and Nightingale Islands in the remote Tristan da Cunha archipelago, central South Atlantic Ocean. Visits by ornithologists to these islands, particularly Inaccessible, have been infrequent and brief, allowing for the collection of specimens but only limited field studies (Moseley 1892, Wilkins 1923, Broekhuysen & Macnae 1949, Hagen 1952, Elliott 1957, Richardson 1984). In consequence, the life histories of the buntings are poorly known. Both species are listed as 'Rare' in the *Red Data Book* (Part 1, Collar & Stuart 1985). We here present the results of observations made on these birds while we were members of the Denstone Expedition to Inaccessible in 1982–83 (Swales *et al.* 1985).

Study site and methods

Inaccessible (37°15′S, 12°30′W) is the second largest island of the Tristan da Cunha group, with a planar area of 13 km^2 (P. G. Ryan, *contra* Siddall 1985). Its biota and human history are described by Wace & Holdgate (1976), Richardson (1984) and Fraser *et al.* (1988) and references therein. The island is uninhabited and is rarely visited by Tristan islanders. We were present on Inaccessible Island between 14 October and 23 December 1982, and 21 January and 10 February 1983.

Observations were made of Tristan Buntings in a 1 ha site at Blenden Hall, a gently sloping landslip at sea level on the west coast of the island (locations of place names are given by Siddall 1985). The vegetation here is dominated by *Spartina arundinacea* tussock-grass up to 3·0 m tall, with patches of ferns *Blechnum penna-marina* and sedges. Scattered individuals and clumps of Island Tree *Phylica arborea* occur nearby. A small perennial stream runs through the area. Twenty buntings, including four breeding pairs, were uniquely colour-ringed. Measurements to the nearest 0·5 mm were made with stopped rule and dividers; masses were recorded to the nearest 0·1 g with a 50 g Pesola spring balance. Nest watches totalling 21·7 h were made of nest-building by one pair at their first and first replacement nests. The incubation and nestling stages were monitored at other nests, for 44·3 h and 30·2 h, respectively. Nest watches covered all daylight hours and averaged 1·5 h (range 0·3–9·8 h; $n=77$).

Unless otherwise specified, data on the Tristan Bunting were collected at the Blenden Hall study site, where the duller-plumaged 'lowland' form (see Morphology, below) occurs. Opportunistic observations were made on the island plateau (300–500 m a.s.l.), where *Spartina* tussock is relatively scarce and the vegetation is dominated by tree ferns *Blechnum palmiforme* and *Phylica*.

Wilkins' Buntings were mistnetted and ringed/colour-ringed at a small *Phylica* grove ('Wilkins' Copse') at Skua Bog, Blenden Hall. Observations of this, by far the rarer of the two buntings at Inaccessible, were otherwise confined to chance encounters elsewhere at Blenden Hall and on the island plateau.

Tristan Bunting

Habitat and population size

The Tristan Bunting occurs in all habitats at Inaccessible, but appeared to be most abundant on the tussock-clad coastal slopes and forelands. The Blenden Hall study site held seven breeding pairs per hectare (*contra* M. W. Fraser, in Collar & Stuart 1985), and a variable number of non-breeding and subadult birds. Densities in other habitats appeared lower but were not quantified. However, we estimated from our general observations that the population was at least 5000 birds, and probably much more. It is not possible to infer any population changes from the two previous estimates (the 'thousands' of Hagen (1952) and Richardson's (1984) 500–1000 pairs), but the species has invariably been recorded as abundant on Inaccessible.

General habits

Tristan Buntings occur singly or in pairs. They forage in both open and densely-vegetated areas, on the ground or on tussock seedheads. In *Phylica* woodland they forage on bark, in the foliage or amongst lichens on the limbs and trunks of the trees. They frequent the tussock/beach interface and debris at the highwater line and forage amongst exposed boulders at low tide.

The buntings are fairly approachable (they can be caught by long-handled net, but not by hand). They rarely actively approached humans, nor displayed the strong curiosity which characterised Tristan Thrushes *Nesocichla eremita* at Inaccessible.

Food

The diet of Tristan Buntings was not quantified, but in the coastal lowlands the birds appeared to feed mainly on *Spartina* seeds. Here they also ate other vegetable matter including fruits of *Empetrum* and *Nertera*. Caterpillars were occasionally fed to nestlings. Small marine molluscs were taken on the beaches. Stomach contents recorded by Hagen (1952) and Richardson (1984) comprised at least three types of seed, six insects and one other arthropod.

Territoriality

Breeding males sang from traditional conspicuous, elevated song posts such as tall tussock or *Phylica* bushes whence they also pursued other birds in apparent territorial disputes or accompanied the female to the nest. The males also rested and preened (including over-wing head-scratching) on these perches. Observations of chases between birds were not quantified or related to stage of breeding season, but appeared frequent between adult males and less frequent between adult males and subadults. The high densities of nests and birds at Blenden Hall were such that the exclusion of other birds from even a small territory was probably impossible. Females were observed chasing subadult birds and other adult females. An incubating female occasionally left her nest to pursue a female which had flown over the nest site.

Breeding season and schedule

Active nest-building was first recorded on 25 October, but a nest with eggs, found on 28 October, indicated that nest-building was underway earlier in that month. Eggs are laid as soon as the nest is complete. The breeding season is protracted, clutches being found as late as 22 January (a fifth breeding attempt by a colour-ringed pair) and 4 February.

Four colour-ringed pairs at Blenden Hall built one, two, four and five successive nests, respectively, between 25 October and 22 January. Three of these nests were completed but abandoned before laying. The interval between failed and replacement nests was from one to fifteen days.

Nest

Nests are built by the female and situated on the ground ($n=7$) or 40–100 cm above it (mean 70 cm; $n=7$) in bundles of sloping or bent-over tussock. Repeat nests were located an average of 3·8 ± 2·0 m (range 0·2–4·5; $n=7$) from failed nests. The nests are open (undomed) and oval or nearly circular. The average dimensions (cm) of five nests were: external length 11·7 (range 11·0–14·0); external breadth 10·0 (8·5–12·5); cup length 7·4 (6·5–9·0); cup width 6·4 (5·5–8·0); cup depth 4·9 (4·5–6·0). Nests are built entirely of tussock leaves, the base and walls with relatively long, broad leaves, the cup lined with shorter, finer ones. One nest, completed in four days, comprised 1287 tussock leaves distributed as follows (measurements in cm): base 418 leaves (13·4 ± 7·1; range 3–54), cup 616 leaves (8·7 ± 4·8; 3–40), lining 253 leaves (5·4 ± 4·0; 1–18).

The female made an average of 8·4 ± 1·1 visits per hour to the nest during building. The duration of such visits was 1·1 ± 1·1 min (range 0·1–10·0; $n=170$). Trips to collect nest material averaged 2·7 ± 4·9 min (range 0·2–34·0; $n=162$). The distance travelled could be estimated on 78 occasions, and averaged 13·5 ± 9·6 m (range 0·5–40·0). Nest building took four ($n=1$) or five ($n=1$) days. On two occasions the male brought strands of tussock to the nest site, but the material was dropped when the bird sang from tussock above the nest. The male fed the female at the nest only once during nest building. At another nest, the female brought strands of tussock to the nest on one occasion on the 12th and 14th days of incubation.

Eggs

Tristan Bunting clutches comprise one ($n=2$) or two eggs ($n=10$). The eggs are pale blue with a light scattering of small faint brownish-purple spots at the sharp end and a variable amount of larger irregularly shaped spots concentrated at the blunt end where the ground colour may be completely obscured. Eggs average 24·2 ± 0·9 mm long (range 22·5–26·0;

$n=9$) and $17 \cdot 2 \pm 0 \cdot 9$ mm broad (16·5–19·0; $n=9$). The laying of the first and second eggs in two clutches was separated by maxima of 15·0 h and 16·5 h.

Incubation

The incubation period of 18 days was determined for one egg only. Incubation is undertaken exclusively by the female. Hagen (1952) presumed, on the basis of the presence of bare brood patches, that the male also incubated.

At one nest, watched for 11·7 h over six days from the day of laying to four days before hatching, the female spent 74·5% of the time on the eggs. The average duration of incubation sessions was $17 \cdot 4 \pm 13 \cdot 6$ min (range 3·0–43·8; $n=23$). Absences from the nest were an average of $6 \cdot 5 \pm 13 \cdot 0$ min (range 0·2–67·2; $n=27$). The incubating female was fed by her mate 17 times at the nest and seven times >1m distant. The overall daily feeding rate of the female by the male was $2 \cdot 8 \pm 1 \cdot 7$ per hour (range 1·9–6·2; $n=6$). The female was fed once *c.* 20 m from the nest by an unringed adult male (not her mate).

Another nest was watched for 32·5 h during incubation over 10 days up to two days before the eggs hatched. The laying date is unknown, but on the basis of an incubation period of 18 days, may be backdated to six days before observations commenced. The female spent 85·5% of this time on the eggs. Incubation sessions averaged $12 \cdot 9 \pm 8 \cdot 9$ min (range 0·2–42·7; $n=68$). Absences from the nest were an average of $3 \cdot 6 \pm 3 \cdot 4$ min (range 0·1–17·2; $n=77$). The male fed the female on the nest ($n=1$), in tussock directly above the nest ($n=70$), or further away up to 50 m distant ($n=18$). The daily average rate of such feeds was $2 \cdot 7 \pm 0 \cdot 8$ per hour (range 1·0–3·0; $n=10$).

Feeding was preceded by the male calling *chit* and the incubating female twittering softly in response, but louder when she left the nest and flew with the male to a feeding perch or if the male did not approach the nest. The male regurgitated food directly into the female's bill as she perched below or, once only, above him on a vertical or near vertical tussock stem. The female wing-quivered while soliciting food and being fed. The male often lingered to sing near the nest after feeding the female. If the female had not been fed for a relatively long period, she uttered a soft, enquiring *tchip* call from the nest. Thereafter she emerged and flew off or remained to forage on the ground or from the leaves of *Rumex* plants near the nest.

Nestling

The Tristan Bunting nestling apparently has not been described. An eight-day-old chick is described as follows:

Plumage. Ventral tracts: throat feathers creamy white with blue-grey base. Dorsal tracts: feathers ochreous dark olive with black centres, paling towards tail. Head down dark grey. Primaries nearly black; secondaries dark grey fading distally, tipped pale buff. Bill pale purple with off-white base and cutting edges. Gape flange pale yellow. Gape pale pink, tongue dark pink. Legs and feet pale purplish-brown. Skin pale flesh-pink. Iris dark brown.

Observations were made at the second nest (above) for 28·2 h over 13 of the 19 days of the nestling period from the day of hatching. The growth of the two chicks is shown in Figures 1 and 2. The primary and secondary quills of the A chick sprouted 8 days after hatching. The flight feathers of the B chick, which hatched on the same day, remained in quill until 13 days after hatching. The eyes of the A chick had opened partially by the 8th day, and fully by the 12th day after hatching. Sixteen days after hatching its primaries and secondaries were well sprouted and dark brown with pale buff edgings. The wing coverts and tertials were broadly tipped buff. The spinal tract feathers were up to 6 mm in length and darkening at the base. The tail feathers had sprouted. The rear of the crown and nape were well-feathered and down remained only on the sides of the crown and sparsely on the lower spine. The B chick died 18 days after hatching, when it was 62% the mass of its sibling (which fledged the following day). The successful fledgling was fed by the parents for at least 3 days after leaving the nest.

For the first 3 days after hatching the two nestlings were fed either by the female alone or via the male, who transferred food to her in the same way as he did during incubation. Subsequent visits by the male were on his own or with the female. The overall feeding rate, averaged for each day, was $5{\cdot}7 \pm 1{\cdot}3$ feeds per hour (range 3·9–8·1; $n=13$). Brooding of the chicks was by the female. The proportion of time spent brooding tended to decrease as the chicks grew older (Fig. 3). The average duration of brooding sessions was $6{\cdot}2 \pm 7{\cdot}4$ min (range 0·2–33·0; $n=86$), again tending to decrease with increasing age of the nestlings. Absences from the nest by the female averaged $10{\cdot}5 \pm 9{\cdot}7$ min (range 0·2–40·5; $n=88$), increasing as the chicks grew older.

Removal of faeces from the nest was first observed 7 days after the chicks hatched and up to 4 days before fledging. This activity was carried out mainly by the female (17 times, as against the male's 6).

Breeding success, mortality and predation

The fate of 14 eggs was determined; five hatched successfully, four failed to hatch, three were eaten by Tristan Thrushes and a c/2 was deserted, possibly because of heavy rain (65 mm in 24 h. The average daily rainfall in that month (November) was 9·8 mm; C. P. Siddall). Two of seven nestlings fledged successfully, one died of unknown causes, and four were eaten by Tristan Thrushes.

Tristan Buntings gave harsh *chick chzick* alarm calls and took cover in vegetation when Subantarctic Skuas *Catharacta antarctica* flew overhead. Tristan Buntings were recorded from only 0·1–0·2% of skua prey remains or regurgitates (Fraser 1984a, Ryan & Moloney 1991a), however, indicating that the skua does not severely affect the population as a whole. A female bunting alarm-called and took cover in tussock when a Swallow *Hirundo rustica* flew over. This is a rare vagrant to Inaccessible Island (Fraser 1984b) and presumably unfamiliar to the bunting. Tristan Thrushes prey upon bunting eggs, nestlings and fledglings (see also Ryan & Moloney 1991b). A female bunting attacked a Tristan Thrush which had approached to within 1 m of her nest, fluttering over the thrush and twice landing on its back and pecking it. The thrush then flew off and the bunting returned to her nest.

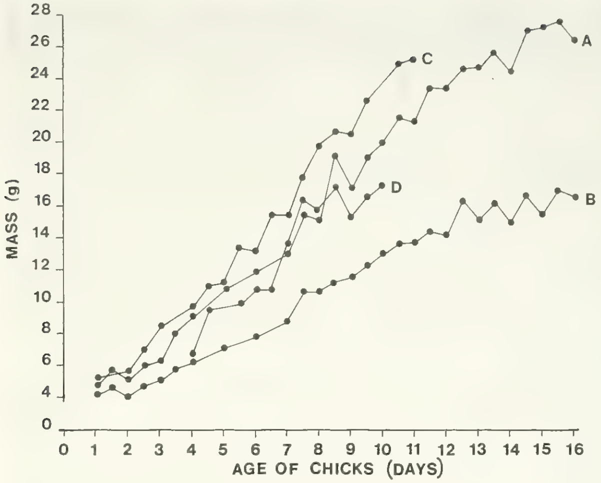

Figure 1 (above). Increase in mass of Tristan Bunting nestlings. Birds A and B are siblings; A fledged 19 days after hatching, B died 18 days after hatching. C and D were b/1; both were eaten by Tristan Thrushes.

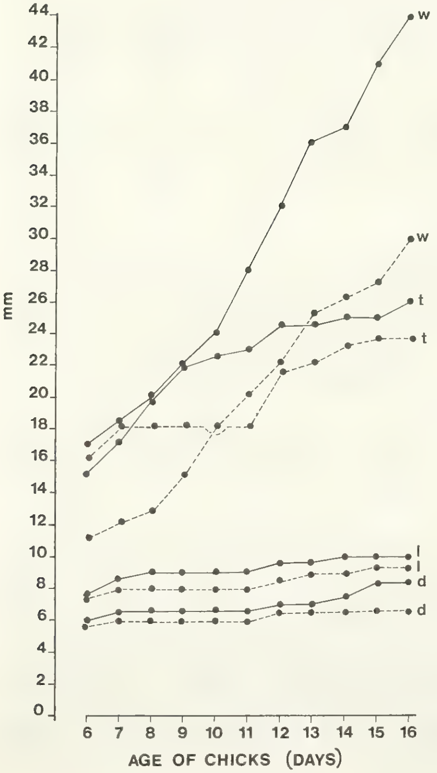

Figure 2. Increase in wing (w), tarsus (t) and bill lengths (l) and bill depths (d) of a brood of two Tristan Buntings. The A chick (solid line) fledged 19 days after hatching; the B chick (dotted line) died after 18 days.

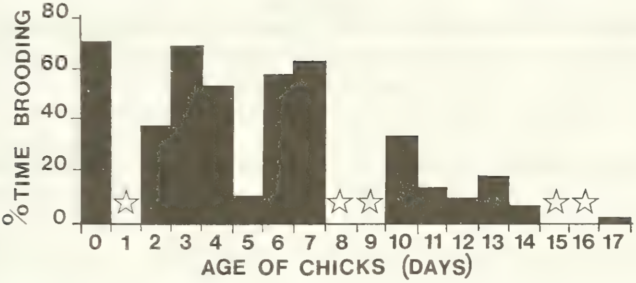

Figure 3. Proportion of time spent brooding by a female Tristan Bunting. Stars indicate no data.

Morphology and taxonomy

The presence of age-related plumage phases in the Tristan Bunting is recognized (Hagen 1952). Previously undocumented, however, is the existence of two distinct and apparently habitat-related forms. In 1982–83 it was found that the plumages of birds on Inaccessible Island's summit plateau were distinctly brighter and richer in colour, at all ages, than those found at sea level and on tussock-clad slopes up to the edge of the plateau. The possibility that this represented age-related plumage variations was precluded by the discovery of 'upland' nestlings whose colouration differed markedly from that of 'lowland' nestlings. A brilliant yellow gape flange, deep pink mouth and a rich yellow suffusion to the skin, particularly on the belly, were the most striking features of the 'upland' nestlings.

A comparison of the nestlings of the two forms is given in Table 1. The 'upland' nestling was collected near North Point (*c*. 300 m a.s.l.) on 22 December 1982 and estimated to be 14 days old. The 'lowland' nestling from Blenden Hall was 16 days old.

Table 2 compares the plumages of 'upland' and 'lowland' breeding female Tristan Buntings. Both birds were collected on the nest, the 'lowland' at sea level at Blenden Hall on 4 February 1983, the 'upland' from the island plateau at *c*. 350 m a.s.l. on 11 December 1982. Adult males were not collected, but the 'upland' form was distinctly more brightly coloured than the 'upland' female and his lowland counterpart. We obtained very few mensural data of full-grown 'upland' buntings, but these indicated no differences between the forms (Tables 3 and 4). There appeared to be no differences in general habits that could not be explained by differences in, for example, vegetation composition (the lowland form feeds extensively on the seeds of *Spartina*, which is less abundant on the plateau). This distinct form has gone unrecognized because very few observations previously have been made on the island plateau. More importantly, specimens had not been obtained there previously, all having been collected at or near sea level in the lowlands or on coastal slopes where the bright birds, in our experience, do not occur.

The Tristan Bunting on Inaccessible Island is classified as the same race, *N. a. acunhae*, which formerly occurred on Tristan. However, there

TABLE 1
Comparison of 'upland' and 'lowland' forms of Tristan Bunting nestlings

Upland	Lowland
Head	
Down pale grey, quills dark slate-grey	Down grey, quills light blue-grey
Throat	
Yellow	Off-white
Breast	
Vivid yellow	Off-white
Back	
Feathers rich dark ochreous olive, centred black	Feathers dull olive, centred black
Thigh	
Yellow, quills slate-grey	Olive, quills blue-grey
Wing	
Primaries almost black; secondaries dark grey, fading distally, tipped pale buff; tertials dark grey, inner two tipped yellow-buff. Primary coverts almost black edged olive; greater coverts black with yellow tips and edges of outer webs; median and lesser coverts yellow-buff centred black.	Primaries dark with pale buff edging; secondaries washed-out grey, outer webs narrowly edged light olive; tertials washed-out grey, broadly tipped buff. Primary and median coverts dark brown, edged pale olive-grey; lesser coverts olive-brown edged olive.
Bare parts	
Upper mandible dark olive, cutting edge bright yellow, lower mandible bright yellow. Gape flange bright yellow, mouth deep rose pink. Legs and feet purplish-brown, claws tipped bright yellow. Skin pale pink with a rich suffusion of bright yellow, particularly on the belly.	Bill pale purple, base and cutting edges off-white. Gape flange off-white, mouth pink. Legs and feet pale purple, claws tipped off-white. Skin dark flesh pink.

exists only one specimen (the type) collected on Tristan, precluding taxonomic comparisons (Stresemann 1953). Nightingale birds *N. a. questi* are smaller in most respects than those from Inaccessible (Abbott 1978). The Nightingale form is described as racially distinct on this basis (Lowe 1923), although there is considerable overlap between the birds of both islands.

Wilkins' Bunting

Wilkins' Bunting is similar to the Tristan Bunting in colour, but is slightly larger and has a strikingly heavy bill. It is by far the rarer of the two species at Inaccessible.

Habitat and population size

At Blenden Hall, Wilkins' Buntings were observed in *Phylica* and, to a lesser extent, in tussock. They were rarely encountered on the island plateau, and then only in *Phylica*. The birds occurred singly or in pairs.

TABLE 2
Comparison of breeding female 'upland' and 'lowland' forms of Tristan Bunting

Upland	Lowland
General appearance	
Bright yellow underparts and rich olive green upperparts, faintly streaked	Dull, washed-out green, broadly streaked on back
Upperparts	
Crown rich olive-green, centred black. Forehead similar but more yellow. Nape, mantle and upper back feathers olive with faint dark central streak. Lower back and rump uniform unstreaked light olive.	Front of crown and centre of forehead greenish yellow with dark centres; sides of forehead yellow. Grey on lores and below eye. Feathers from central crown to lower back pale greyish-green indistinctly broadly-centred black. Rump feathers unstreaked.
Underparts	
Chin off-white. Rest of underparts rich cadmium yellow, brightest on throat and breast, paling slightly towards vent. Undertail coverts rich golden yellow.	Chin off-white, throat pale lemon-yellow. Rest of underparts pale washed-out yellow fading to almost white at vent; undertail coverts pale lemon yellow.
Wing	
Primaries almost black, outer webs narrowly edged rich yellow-olive. Secondaries and tertials almost black, broadly edged ochreous olive. Primary coverts almost black, edged pale olive. Small feathers almost black, broadly edged pale yellow-olive; lesser coverts broadly tipped olive.	Primaries dark grey with narrow greyish-yellow border, inner two bordered olive. Secondaries and tertials dark grey, broadly edged grey-green. Primary coverts dark grey edged greenish. Median and lesser coverts dark grey broadly edged dirty-olive.
Tail	
Dark brown with bright yellow outer webs, brightest at base of two outer tail feathers	Almost black, outer webs narrowly edged bright yellow
Bare parts	
Upper mandible dark grey, base yellow. Lower mandible bright yellow. Legs and feet pale brownish-purple, claws tipped bright yellow. Iris dark brown.	Upper mandible dark grey with paler cutting edge; lower mandible pale grey. Legs and feet dark brown, claws tipped off-white. Iris dark brown.

They were most often seen in *Phylica* (possibly just because they were more conspicuous there), but also foraged on the ground and amongst tussock and short ferns on Blenden Hall. One bird was captured in a walk-in trap (set for flightless rails *Atlantisia rogersi*) on the ground in dense tussock up to 2 m high.

Nine birds were mistnetted and uniquely colour-ringed in the *Phylica* grove at Skua Bog in November 1982. Eight of these birds were not seen again. An adult male remained there for at least 18 days, often in company with a female, presumably its mate. This high turnover indicates that some birds are mobile. The *Phylica* copse at Skua Bog represents the only relatively extensive area of this vegetation type at Blenden Hall (although

TABLE 3
Measurements of 'lowland' Tristan Buntings (linear measurements in mm, mass in g)

	Wing	Tail	Tarsus	Middle toe	Hind toe	Culmen	Bill width	Bill depth	Mass
Adult males									
Mean	83.2	71.0	25.9	25.5	19.8	14.4	7.0	10.2	29.2
SD	1.7	4.0	1.3	1.3	1.6	0.5	—	0.3	2.6
Range	81–87	64–77	24–27.5	24–26.5	17.5–21	13.5–15	—	10–10.5	24.5–34
n	13	11	13	4	4	13	4	4	11
Adult females									
Mean	80.6	66.6	24.4	24.7	19.0	14.6	7.5	9.2	27.9
SD	1.8	4.0	0.6	1.1	1.4	0.4	0.7	0.3	1.0
Range	79–83	61–72	24–25	24–25.5	18–20	14–15	7–8	9–9.5	26.5–29
n	5	5	5	2	2	5	2	2	5
Unsexed subadults									
Mean	80.0	69.4	26.2	25.8	17.3	14.2	7.3	9.7	27.5
SD	1.4	3.3	1.7	2.4	0.3	0.7	0.6	0.6	2.9
Range	79–82	64–72	24–28	24–28.5	17–17.5	13–14.5	7–8	9–10	24–31
n	6	6	6	3	3	6	3	3	5

TABLE 4
Measurements of 'upland' Tristan Buntings (linear measurements in mm, mass in g)

Age and sex	Wing	Tail	Tarsus	Middle toe	Hind toe	Culmen	Bill width	Bill depth	Mass
Imm	80	68	23	25.5	17.5	13.5	8	8.5	29.5
Imm ♂	82	74	24	26.5	19	14.5	8	9.5	25.7
Ad ♀	82	71	23	24.5	17.5	14	7	9	33.0
Mean	81.3	71	23.3	25.5	18	14	7.7	9	29.4
SD	1.1	3.0	0.6	1.0	0.9	0.5	0.6	0.5	3.6

TABLE 5
Measurements of Wilkins' Buntings (linear measurements in mm, mass in g)

	Wing	Tail	Tarsus	Middle toe	Hind toe	Culmen	Bill width	Bill depth	Mass
Males									
Mean	92	74.8	29.2	26	22	18.5	9.5	13.9	44.2
SD	1.7	3.4	0.6	2.3	1.6	0.3	0.6	0.5	1.9
Range	91–95	73–80	28.5–30	24.5–29	20.5–24	18–19	8.5–10	13–14.5	41–44.5
n	6	6	6	4	4	6	6	6	6
Females/immatures									
Mean	92	79.2	29.2	28.3	22.0	18.9	9.2	14	42.3
SD	1.1	4.3	1.7	1.5	1.0	0.5	0.3	—	0.8
Range	91–93	73–82	27–31	27–30	21–23	18.5–19.5	9–9.5	—	41.8–43.5
n	4	4	4	3	3	4	3	3	4

isolated individuals and small groups of trees are thinly scattered amongst the tussock there), and is some 3 km distant and 500 m below the main areas of *Phylica* on the island plateau.

There are approximately 4·5 km^2 of sparse to dense *Phylica* woodland on Inaccessible, mainly in the northeast of the plateau. If Wilkins' Bunting occurs exclusively in *Phylica*, and the grove at Skua Bog (which supported a minimum of one pair) is representative of this vegetation type elsewhere on the island, then the population at Inaccessible may be in the order of 200 pairs. This may be larger if there is a mobile contingent, and if the birds are not wholly dependent upon *Phylica*. Elliott (1957) estimated 30 pairs of and 30 young Wilkins' Buntings on Nightingale in 1953. Later estimates by Elliott (in Vincent 1966–1971) suggested populations of 70–120 birds on Nightingale and 40–90 on Inaccessible. Richardson (1984) estimated 30 pairs on Nightingale in 1973–1974. The total population of Wilkins' Bunting has never been large, therefore, and may be in the region of *c*. 500 birds.

On the basis of the number of specimens collected Abbott (1978) concluded that Wilkins' Bunting was more abundant on Nightingale than Inaccessible, despite the larger area of the latter. This is unlikely to be the case, however, as the number of birds collected on Nightingale reflects rather the relative ease of landing on and access to the interior of the island and the consequently high number of scientific visits there compared to Inaccessible.

Food

The large bill of Wilkins' Bunting allows it, and not the relatively light-billed Tristan Bunting, to feed upon the hard fruits of *Phylica*. Wilkins' Buntings tested these with their bills, rejecting many and appearing to pluck and process the blackest (presumably ripest) ones. At Blenden Hall they also foraged in uniform stands of tussock, feeding from the seed heads or on the ground. The buntings methodically searched under and removed invertebrates from the leaves of *Rumex*. Hagen (1952) reported a variety of vegetable and invertebrate remains in stomachs of Inaccessible birds. In contrast, those on Nightingale appear to feed almost exclusively on *Phylica* and other fruits (Hagen 1952, Elliott 1957, Richardson 1984).

Breeding

No Wilkins' Bunting nests or eggs were found. Males defended territories at Skua Bog and sang from exposed perches from early November on Inaccessible. An adult feeding two newly fledged chicks was seen in January on the plateau (M. K. Swales, in Collar & Stuart 1985). Broekhuysen & Macnae (1949) collected a juvenile on Nightingale in March, indicating fledging in February. Elliott (1957) reports eggs and young at Nightingale in December and January and a fledged but dependent chick in early April.

Morphology and taxonomy

The measurements of 10 birds caught at Blenden Hall are given in Table 5. Our average figures are slightly larger in all respects apart from bill width than three birds measured by Hagen (1952). Although wing-length and, particularly, mass are greater than those of Nightingale birds, our small sample suggests that the size difference between the races is perhaps not as marked as Hagen (1952) contends. Measurements of Nightingale birds given by Abbott (1978) are not comparable because of differences in measuring techniques.

The male of the Inaccessible race *N. w. dunnei* has not been described. One, captured at Blenden Hall on 8 November 1982, is described as follows. (A photograph of the head of this individual appears in Sinclair 1984, p. 336.)

Upperparts: Forehead and front of crown bright olive-yellow with black centres; rest of crown similar but less bright. Fairly conspicuous short bright yellow eyestripe. Lores and front of ear coverts greenish off-white. Nape dark olive, finely streaked black; back and mantle dark greenish-yellow finely streaked black. Rump dark greenish-yellow. Upper tail coverts slightly more greenish than rump. Outer webs of tail feathers bright yellow, inner webs pale yellow on outermost feathers, darkening to almost black on central ones. Underparts: Throat bright yellow. Upper breast slightly paler yellow; belly, flanks and undertail coverts similar but with a slight olive tinge.

Primaries uniform dark grey with bright yellow margin *c.* 1 mm wide on outer web. Secondaries as primaries but with broader yellow margin (up to 2 mm). Tertials generally darker with yellow margin broadening to 4 mm on inner tertial. Primary coverts as primaries with narrow faint yellow margin on both edges. Greater coverts darker than secondaries, with yellow reaching the quill at feather tip and up to 4 mm broad. Median coverts dark, tipped up to 5 mm with yellow and with black central stripe. Lesser coverts greenish-yellow, slightly less bright than medians. Underwing coverts pale yellow, dark at base; very sparse or almost absent.

Bare parts: Upper mandible dark, almost black with grey tip and cutting edge. Lower mandible slightly paler than upper. Iris dark brown. Legs dark purplish-brown; claws of front toes slightly darker than legs, hind claw almost black.

Rictal bristles absent; brood patch bare but unvascularised; large cloacal protuberance.

Measurements (mm): Total length 184; wing (flattened chord) 91; tail 87; culmen18; bill depth 13·5; bill width 11; tarsus 29; middle toe 24·5 (with claw of 3·0); hind toe 24 (with claw of 13). Mass 41·1 g

Wing formula: P1 minute, 11·5 mm <primary coverts; P2 −5 (=5 mm <wing tip); P3 −2; P4 −1; P5 longest=wing tip; P6 −2; P7 −5; P8 −9; P9 −12; P10 −14.

A territorial male at Skua Bog was often accompanied by a female Tristan Bunting, to which he displayed and followed into dense tussock 30 m from the edge of the *Phylica* grove. A bunting observed in *Phylica* on the island plateau near North Point displayed characters of both Wilkins' (short, deep-based conical bill, general colouration) and Tristan Buntings (relatively small size). These observations suggest that interbreeding between the bunting species may take place.

Conservation of Tristan and Wilkins' Buntings

The buntings of the Tristan group are of considerable scientific importance and of particular interest to evolutionary biologists. The islands and their landbirds represent a 'Galapagos in miniature' (Wace & Holdgate 1976, Collar & Stuart 1985), and Abbott (1978) notes that the islands display a 'simplicity which even the Galapagos lack' which would facilitate ecological and taxonomic research. The three forms of bunting also provide an interesting demonstration of variation within a population of such a small total range (Collar & Stuart 1985).

Within their range, Tristan and Wilkins' Buntings probably are under no immediate threat of extinction but are at permanent risk from the introduction of mammalian predators and alien plants (Collar & Stuart 1985).

The Tristan Bunting became extinct on the main island of Tristan da Cunha sometime before the end of the 19th century (Stresemann 1953, Bourne & David 1981, Collar & Stuart 1985). Here introduced Black Rats *Rattus rattus* and domestic cats *Felis domesticus* have been implicated in its demise. Habitat destruction, particularly of lowland *Spartina* tussock, probably also played a major part in the bird's disappearance. The coastal forelands at Edinburgh settlement, previously dominated by *Spartina* until at least 1824 (Earle 1832, p. 205), have been replaced by alien pasture grasses. Earle (p. 222) also describes the burning of 'underwood and grass' to create pastures at the 'east end of the island' (presumably Sandy Point). At Stony Beach, tussock apparently was the dominant vegetation until at least 1890, but by 1938 it had been completely destroyed by introduced cattle (Munch 1971, p. 227). The upland areas of Tristan, where the vegetation is similar to that of the Inaccessible plateau, on which buntings are numerous, remain largely unmodified by man. The extirpation of the Tristan Bunting from Tristan is likely to have been the result of a combination of anthropogenic factors, therefore, which would have similar consequences on Inaccessible.

Moseley (1892) makes brief mention of an attempt by Tristan islanders to reintroduce the Tristan Bunting to their island. Although no details are given, the exercise clearly failed. The reintroduction of the bunting to Tristan is an unrealistic goal as long as the factors which caused its extirpation there prevail. If grazing livestock were excluded from areas on the Tristan settlement plain, for example, then *Spartina* tussock could be re-established and provide potential habitat for Tristan Buntings. Nevertheless, reintroduction of the Tristan Bunting to the main island should probably be attempted only if the populations on the outer islands are threatened, as it would otherwise preclude the identification and study of an undiscovered relict population or natural recolonisation; either of which, although unlikely, may be remotely possible.

There is no evidence that Wilkins' Bunting has ever occurred on Tristan. The small population at Nightingale appears to be heavily dependent upon *Phylica* woodland (Hagen 1952, Elliott 1957). Any modification of this habitat will inevitably affect them adversely. In 1974 Tristan islanders felled 1 ha of *Phylica* while removing alien New Zealand Flax *Phormium tenax* (Richardson 1984). *Phylica* is also used as firewood by islanders visiting Nightingale to harvest seabirds, their eggs and guano. Harvesting parties may remain on Nightingale for three weeks or more (Richardson 1984). An alternative fuel source or some other form of control may be necessary to prevent over-exploitation of *Phylica*. The feasibility of cultivating *Phylica* as a fuel source and replacing any trees chopped down for burning may be worth investigating. Introduced House Mice *Mus musculus* feed on seeds of *Phylica*, and have been implicated in limiting its regeneration at Gough Island (Breytenbach 1986, Ryan *et al.* 1989). Great care must be taken, therefore, to ensure that mice, which are abundant on Tristan, do not reach the outlying islands.

The Tristan da Cunha Conservation Ordinance, 1976, provides for the protection of all species of bird at Inaccessible Island, with the exception of Rockhopper Penguin *Eudyptes chrysocome* and Great Shearwater *Puffinus gravis* which may be harvested there by Tristan islanders (Wace & Holdgate 1976, Grundy 1984). Such a concession is undesirable, however, because although harvesting of seabirds is virtually confined to Nightingale (Richardson 1984), traffic to Inaccessible would increase the likelihood of introducing alien organisms. Visits would also increase the possibility of other disturbances such as fire. Extensive burning of the *Spartina* tussock has occurred on Inaccessible (Rogers 1926), and must have at least temporarily reduced the bunting population through the destruction of nesting habitat and food plants. To avoid a repeat of the castastrophic modification of the vegetation and other harm caused by man and his commensals on Tristan da Cunha, the prohibition of agricultural activities on Inaccessible (Section 3·3 of the Conservation Ordinance; Wace & Holdgate 1976) must be maintained. Indeed, any potential value which Inaccessible may have for agricultural and other human development must be weighed against its scientific and conservation importance as one of the most unspoilt oceanic islands.

Inaccessible still lacks nature reserve status, despite calls for it to be so declared (Collar & Stuart 1985 and references therein). Such formal declaration is highly desirable for the buntings, the island's other landbird species and its seabird colonies (Collar & Stuart 1985, Fraser *et al.* 1988). Inaccessible is also worthy of registration within the World Heritage Convention of 1972.

Acknowledgements

The Denstone Expedition to Inaccessible was supported by the Denstone Expeditions' Trust and endorsed by the Island Council and Administrator of Tristan da Cunha. We thank the other team members for their help in the field and P. G. Ryan, L. Fraser, M. K. Swales and D. W. Snow for their comments on the manuscript.

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The range of *Malimbus ibadanensis*

by J. H. Elgood

Received 28 November 1991

The rediscovery of *Malimbus ibadanensis* by J. S. Ash in November 1987 (Elgood 1988) has resulted in a need for reconsideration of the species' probable range. Although Ash's rediscovery was also at Ibadan and only *c.* 5 miles from the type locality (Elgood 1958), recent sight records of males only of *M. cassini* in Ghana (Grimes 1987) raise the question of the true identity of these Ghana birds. Males of *M. cassini* and *M. ibadanensis* are thought to be indistinguishable in the field, though the females are quite distinctive: that of *cassini* being entirely black, while that of *ibadanensis* has conspicuous red on head and throat. Bannerman (1949) mentions sight records of "*cassini*" from Nigeria by S. Marchant in Owerri Province (east of the Niger) and by H. F. Marshall at Ibadan.

With the establishment of *ibadanensis* as a distinct species (Elgood 1958), it seems likely that Marshall had earlier discovered this new species

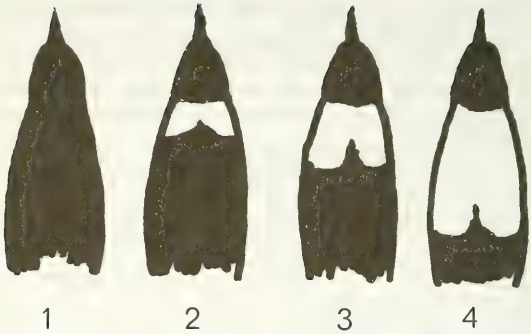

Figure 1. Diagram to show the extent of the red and black areas, as seen in ventral view, in both sexes of *Malimbus cassini* and *M. ibadanensis*.
1. Entirely black ♀ *M. cassini*.
2. ♀ *M. ibadanensis* with red "collar" originally inappropriately called red "bridle".
3. ♂ *M. cassini* with red "throat" or "breast" that would seem to vary somewhat in depth (possibly related to age).
4. ♂ *M. ibadanensis* with extensive red "apron"; also subject to some variation in extent. The posterior black area usually shows some anterior extension in the mid-ventral line.

but misidentified it as *cassini*. This view was accepted by Marshall himself, who, in any case, had only encountered the male. Later when both Hall & Moreau (1970) and Louette (1981) gave the western limit of *cassini* as the Sanaga River in Cameroun, I excluded *cassini* from the Nigerian Check List (Elgood 1982). But *ibadanensis* has only been positively identified in a small area centred on Ibadan (west of the Niger), though Field (1979) in his review of the genus *Malimbus* shows Marchant's Owerri bird as *ibadanensis* in a distribution map. Marchant's Owerri record of *cassini* now needs reconsideration especially if the identity of the Ghana records is finally confirmed with specimens as *cassini*.

However, the possibility that the Ghana birds were *ibadanensis* cannot be ruled out, since only males have been sighted. I have recently been in touch again with G. D. Donald, whose duties in the late 1950s and early 1960s with the West African Cocoa Research Institute required him to divide his time between Ibadan and Tafo, the locality of the recent Ghana sightings of *cassini*. Donald knew *ibadanensis* well in the Ibadan area and in 1960, while in Ghana, invited me to visit him at Tafo as he was convinced he had sightings there of *ibadanensis*. During my brief visit, however, we had no contact with *ibadanensis*; Donald subsequently shot a red-breasted male *Malimbus*, but unfortunately the corpse lodged in an oil palm and was not recoverable. Donald was convinced he had found evidence of a significant range extension of *ibadanensis*; nevertheless the bird could equally well have been a ♂ *cassini*.

Unfortunately too few specimens of *ibadanensis* have been available for examination for a clear idea of the variation in the width of the red area, in both sexes, to emerge. Nevertheless, as Figure 1 shows, ♂ *cassini* has a red area, variously called "bridle", "collar" or "apron", intermediate between the red areas of ♀ *ibadanensis* and ♂ *ibadanensis*. It is concluded that ♂ *cassini* cannot be certainly distinguished in the field from *ibadanensis*, probably not from either sex, and certainty of identity must rest on observing a ♂ consorting with the all-black ♀ while breeding. Because there are other similar sized all-black ploceids in West Africa this may prove a very difficult task. Examination of museum specimens suggested that no other differences (e.g. tail length, bill length or bill shape) could be of any value as field characters for separating the two species. It seems that a specimen must be collected (or photographed) at Tafo (or elsewhere in Ghana) to resolve the important question of the western range limit of one or other of these rare malimbe species.

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BOOKS RECEIVED

Bregulla, H. L. 1992. *Birds of Vanuatu*. Pp. 294. 24 coloured plates, 34 black-and-white photographs, map. Anthony Nelson Ltd (PO Box 9, Oswestry, Shrophsire SY11 1BY). ISBN 0 904614 34 4. £25.00. 23 × 16 cm.

Vanuatu (formerly New Hebrides), a group of about 100 volcanic islands, has a known avifauna of 121 species, and much of it is still densely forested. Heinrich Bregulla has lived for over 20 years in the tropical Pacific, mostly in Vanuatu, and is uniquely qualified to write an account of its bird life. The main part of this book consists of species accounts, which draw on the author's extensive field experience as well as the earlier literature. Dr Marcus Chambers, formerly environmental adviser to the government of Vanuatu, contributes a long introductory chapter dealing with the geography, fauna and flora of the islands, conservation, and other environmental matters. Of the 24 coloured plates, 15 are reproductions of paintings mainly by Hilary Forster, illustrating most of the native birds and some introduced species, 7 are photographs (mainly by the author) of 20 species, and 2 show Vanuatu landscapes.

This is a valuable contribution to the ornithology of the western Pacific.

Fry, C. H., Fry, K. & Harris, A. 1992. *Kingfishers, Bee-eaters and Rollers: a Handbook*. Pp. xi + 324, 40 coloured plates, maps and text-figures. Christopher Helm. ISBN 0 7136 8028 8. £27.99. 24 × 16 cm.

The most obviously striking feature of this new addition to the growing number of handbooks dealing with bird families is the superb collection of 40 coloured plates by Alan

Harris. Beautifully drawn and painted, and well printed, they illustrate fully all the species and main subspecies in the three families, almost all of which are exceptionally attractive. Some of the blues are dazzling. Facing each plate is a small distribution map of each species, and notes on diagnostic features of the forms illustrated. Though literally outshone by the plates, the text is a worthy, substantial accompaniment. A 24-page introduction deals with general points, including discussion of the origin and relationships of the three families within the coraciiform assemblage. It is followed by the main, systematic section, in which the species are dealt with under standard headings (Field identification, Voice, Geographical variation, Habitat and range, etc.). The authors' wide field experience adds greatly to the value of some of the sections. Each species account ends with one or more key references, listed at the end in a 9-page bibliography, followed by an index of scientific and English names.

The publishers are justified in the claim (on the dust-jacket, which has three attractive paintings not reproduced in the main body of the book) that this "is set to become the standard single-volume reference".

Wiens, J. A. 1992. *The Ecology of Bird Communities*. Vol. 1, pp. xviii + 539; vol. 2, pp. xviii + 316. Cambridge University Press. Paperback edition ISBN 0 521 426367 7. £29.95. 23 × 15 cm.

The paperback edition of a major work first published in 1989. A vast amount of material is reviewed and subjected to searching critical analysis. Though the concepts and arguments are often subtle, the writing is extremely clear and a pleasure to read. Anyone with a serious interest in fundamental aspects of bird communities should have access to, and preferably possess, Wiens' *magnum opus*, which in this edition is handsomely produced in spite of its soft cover, and reasonably priced for its 900 pages.

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Papers, from Club Members or non-members, should be sent to the Editor, Dr D. W. Snow, The Old Forge, Wingrave, Aylesbury, Bucks HP22 4PD, U.K., and must be offered solely to the *Bulletin*. They should be typed on one side of the paper, with **treble**-spacing and a wide margin, and submitted in duplicate. The style and lay-out should conform with usage in this or recent issues of the *Bulletin*. Informants of unpublished observations should be cited by initials and name only, e.g. "... of grass (C. Dieter)", but "P. Wee informs me that ...". A limited number of photographic illustrations in black-and-white may be published annually at the Editor's discretion. Authors are requested to give their title, initials, name and full address at the end of the paper.

An author wishing to introduce a new name or describe a new form should append **nom., gen., sp.** or **subsp. nov.,** as appropriate, and set out the supporting evidence under the headings "Description", "Distribution", "Type", "Measurements of type" and "Material examined", plus any others needed.

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Correspondence about Club Meetings and on all other matters should go to the Hon. Secretary, Mrs A. M. Moore, 1 Uppingham Road, Oakham, Rutland LE15 6JB, U.K.

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Published by the BRITISH ORNITHOLOGISTS' CLUB and printed by
Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

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Bulletin of the

British Ornithologists' Club

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Edited by
Dr D. W. SNOW

Volume 112 No. 4 December 1992

FORTHCOMING MEETINGS

Tuesday, 19 January 1993. Dr A. G. Gosler will speak on **"Bill adaptations in the Great Tit—or a mandible for all seasons".** Dr Gosler's address is based on work he began as a David Lack student in 1982. Since 1987 he has been a University Research Officer at the E.G.I. working mainly on the long-term population study of the Great Tit. He is Chairman and past-President of the Oxford Ornithological Society. He will become Editor of *Bird Study* in January 1993.

*Those wishing to attend are asked to notify the Hon. Secretary by Tuesday 5 January 1993**

Tuesday, 16 February 1993. The Abbé R. de Naurois will speak on **"Breeding seasons of birds in the Cape Verde Archipelago".** The Abbé René de Naurois, MC, was chaplain to the Special Services Brigade in WW2. He drew attention to the ornithological importance of the Banc d'Arguin Archipelago, Mauritania (on which subject he obtained his doctorate). He is an authority on the Cape Verde Islands, the Gulf of Guinea Islands and New Caledonia.

Those wishing to attend are asked to notify the Hon. Secretary by Tuesday 2 February 1993.*

Tuesday, 9 March 1993. Dr R. Prŷs-Jones will speak on **"Waders and Lemmings in north-eastern Taimyr, Siberia".** Dr Prŷs-Jones became leader of the Bird Group at the British Museum (Natural History) at Tring in June 1992. He has worked in many countries including Seychelles, Australia and South Africa returning to England to work on coastal bird studies, during which time he studied waders on their breeding grounds in northern Siberia.

Those wishing to attend are asked to notify the Hon. Secretary by Tuesday 23 February 1993.*

Tuesday, 27 April 1993. Paul Salaman will speak on "Avifauna assisting Conservation: an example from the Colombian Chocó".

Those wishing to attend are asked to notify the Hon. Secretary by Tuesday 13 April 1993.*

Tuesday, 18 May 1993. Annual General Meeting, after which Dr Adrian Lewis will speak on "A Bird Atlas of Kenya".

Meetings are held in the Sherfield Building of Imperial College, South Kensington, London at 6.15 pm. for 7 pm. A map showing Imperial College will be sent to members on request.

*Late acceptance and cancellations can usually be taken up to the Thursday morning preceding a meeting, although members are asked to accept by 14 days beforehand as arrangements for meetings have to be confirmed with Imperial College well in advance.

If you accept and subsequently find you are unable to attend please notify the Hon. Secretary, 1 Uppingham Road, Oakham, Rutland LE15 6JB. (tel. 0572 722788) as soon as possible as the booking can often be offered to another member.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 112 No. 4 Published: 31 December 1992

The eight hundred and twenty-first meeting of the Club was held in the Rector's House, at Imperial College, London, on Tuesday, 28 July 1992 at 6.15 pm. 30 Members and 17 Guests attended.

Members attending were: R. E. F. PEAL (*Chairman*), M. A. ADCOCK, Miss H. BAKER, P. J. BELMAN, K. BETTON, J. BOSWALL, Mrs D. BRADLEY, D. R. CALDER, Cdr M. B. CASEMENT RN Retd, Dr R. A. CHEKE, P. J. CONDER, Dr R. A. F. COX, S. J. FARNSWORTH, A. GIBBS, D. GRIFFIN, Ms R-M. JONES, R. H. KETTLE, Dr J. F. MONK, D. J. MONTIER, A. G. MOORE, Mrs A. M. MOORE, R. G. MORGAN, Mrs M. MULLER, J. G. PARKER, Dr R. PRYS-JONES, Dr R. SELF, P. J. SELLAR, S. A. H. STATHAM, N. H. F. STONE, P. TATE.

Guests attending were: Dr ANGELA TURNER (*Speaker*), Mrs B. ADCOCK, Sir DAVID BANNERMAN Bt., Mrs M. CASEMENT, Professor R. CHANDLER, D. COUZENS, Mrs F. FARNSWORTH, Mrs B. GIBBS, G. HIRONS, Miss J. HIRST, Ms K. HOFF, J. METCALFE, Mrs D. MONTIER, P. J. MOORE, E. M. NICHOLSON, R. RANFT, T. WACHER.

After supper Dr Angela Turner, taking her title from Gilbert White, gave the address "The hirundines: a most entertaining tribe of birds". Dr Turner began by giving a comprehensive review of the species and went on to discuss the ecology and behaviour of the hirundines, demonstrating the differences in the ecology of the colonial and of the solitary species.

Some hirundines, such as the Blue Swallow, breed solitarily, others, such as the Swallow, will group together and in a few species, such as the Cliff Swallow, pairs nest close together in large colonies. The differences in gregariousness are associated with differences in ecology. Many species nest in pre-existing holes and can clump together only if nest sites happen to be clumped. Species that can make their own burrows or build a mud nest have more freedom in placing their nest. There is still a problem with open cup nests, however, as they need to be built close to an overhang for protection. Species that make an enclosed nest have more scope to build where they like.

Extreme coloniality in the hirundines tends to be associated with a diet of small, clumped, ephemeral prey such as aphids and midges; the birds may have to hunt high up and far from the nest and so may take a long time to get enough food for their chicks. Species that nest solitarily or in loose groups generally specialise less on such insects and so may be able to feed closer to the nest.

Coloniality can be advantageous, providing some protection from predators and increasing feeding efficiency. Cliff Swallow colonies act as an information centre, with birds at the colony following successful hunters back to the food site; they use a specific call to recruit birds to the food. There are also social advantages and disadvantages to group-breeding, such as the occurrence of extra-pair copulations, infanticide and brood parasitism.

The eight hundred and twenty-second meeting of the Club was held in the Ante-room of the Sherfield Building at Imperial College, London, on Tuesday, 15 September 1992 at 6.15 pm. 32 Members and 22 Guests attended.

Members attending were: R. E. F. PEAL (*Chairman*), Dr WALTER THIEDE (*Speaker*), M. A. ADCOCK, Miss H. BAKER, B. H. BECK, P. J. BELMAN, K. BETTON, J. BOSWALL, P. J. BULL, Cdr. M. B. CASEMENT RN Retd, Dr R. A. CHEKE, J. H. ELGOOD, S. J. FARNSWORTH, G. D. FIELD, D. GRIFFIN, C. A. R. HELM, K. W. HENSHALL, G. HIRONS, M. C. JENNINGS, R. H. KETTLE, Rev. G. K. McCULLOCH, Dr C. F. MANN, A. G. MOORE, Mrs A. M. MOORE,

R. G. Morgan, Mrs M. Muller, P. J. Oliver, R. C. Price, R. E. Scott, P. J. Sellar, N. H. F. Stone, C. E. Wheeler.

Guests attending were: Dr Ulricke Thiede (*Speaker*), Mrs A. Adcock, A. H. Alexander, M. Avery, Mrs J. Bull, Professor R. H. Chandler, D. J. Cheke, Dr N. Coulthard, Ms N. Crockford, Dr J. Eyre, Mrs F. Farnsworth, Ms J. Goffe, S. Jones, Mrs I. Kettle, Mrs I. McCulloch, P. J. Moore, C. A. Muller, N. Peace, Mrs H. Price, Mrs A. Scott, Ms J. Watson, M. Wilsdon.

After supper Dr Walter and Dr Ulricke Thiede gave the address "Is Japan the Britain of the East?" Dr Ulricke Thiede spoke first, comparing the geography of Japan and Britain, both islands at the extreme ends of the euro-asian landmass. She asked the audience to consider whether this accident of geography had resulted in a similar cultural isolation in these two countries.

Dr Walter Thiede gave an account of the zoogeography of Japan, contrasting the alpine north with the sub-tropical forest of the south. 94% of the species which breed in Japan are Palaearctic in origin. He illustrated his talk with slides, including excellent photographs of Steller's Sea Eagle *Haliaeetus pelagicus* and Falcated Duck *Anas falcata*.

814th Meeting of the Club

The report of the 814th meeting (*Bulletin* 112:6) unfortunately lacked the final paragraph, which reads:

The speaker was the Chairman (Mr R. E. F. Peal) and his subject "Birds of north-west Morocco"; the area about which he spoke was north and west of a line joining Boucharen (35°7′N, 6°5′W) and Ras el Aswad (C. Negro) (35°41′N, 5°17′W). It is hoped that a paper including some of the material included in his address may be published in a future number of the *Bulletin*.

British Ornithologists' Club
Income and Expenditure Accounts for the year ended 31 December 1991

	1991		1990	
	£	£	£	£
INCOME				
Subscriptions received				
Members	3,610		3,566	
Non-Member Subscribers	2,433		2,530	
Less Subscription recruitment expenses	(13)		(282)	
		6,030		5,814
Donations received		143		46
Investments income				
Stevens Bequest Fund:				
COIF 2 interest	2,101		—	
Other income	—		89	
Barrington Trust Fund (COIF Income Shares)	32		—	
Interest received:				
Barclays Prime Account	618		108	
Lloyds High Interest Cheque Account	52		445	
COIF Deposit Account	4,032		5,012	
		6,835		5,654
Property				
Clovelly—Rent	585		2,340	
Insurance refund	17		—	
Less costs: Insurance	—		(263)	
Legal Fees arising in 1989 and 1990 re planning permission	—		(2,143)	
		602		(66)

	1991		1990	
	£	£	£	£
Income Tax recovered				
Deeds of Covenant	221		234	
Other	—		55	
		221		289
Bulletin back numbers				
Sales	206		933	
Less: reprinting costs	—		(52)	
distribution costs	(30)		—	
		176		881
Cost of sales				
Opening stock	(100)		(1)	
Closing stock	100		100	
		—		99
Meetings				
Income	2,922		3,653	
Less: Restaurant charges	(2,817)		(3,861)	
Speakers' expenses/notices etc.	(252)		(177)	
		(147)		(385)
Club ties				
Sales	—		—	
Less: Initial purchase	(936)		—	
Stock of ties at 31 December 1991	300		—	
		(636)		—
		13,224		12,332
EXPENDITURE				
Bulletin BOC				
Publication and printing	7,690		8,297	
Additional offprints (separates)	140		266	
	7,830		8,563	
Less: Offprint sales	(193)		(268)	
Author's contributions	(448)		(9)	
	7,189		8,286	
Editor's Honorarium	750		—	
Editorial and Secretarial expenses	145		231	
Address labels	551		865	
Postage	1,307		1,145	
		9,942		10,527
Special Additional Issue (Vol. 112A)		37		—
Projection equipment (re-instated)		—		(100)
Sound equipment		50		—
Committee Administration				
Postage	428		301	
Stationery and printing	514		941	
Secretarial	118		74	
Telephone	250		168	
		1,310		1,484
Insurances		90		56
Accountancy		646		862
Bank charges		18		8
Credit card charges		11		—
Miscellaneous		95		215
		12,199		13,052
Excess of Income over Expenditure/(Excess of Expenditure over Income)		1,025		(720)

British Ornithologists' Club
Balance Sheet as at 31 December 1991

	1991		1990	
	£	£	£	£
General Fund				
Balance at 1 January 1991	32,203		32,923	
Add: Excess of income over expenditure	1,025		(720)	
Balance at 31 December 1991		33,228		32,203
Barrington Trust Fund				
Balance at 1 January 1991 & at 31 December 1991		577		577
Stevens Bequest Fund				
Balance at 1 January 1991	92,568		60,568	
Sale of part of freehold property	62,668		—	
Sale of Chattels—Net	2,511		—	
Property Revaluation	—		32,000	
Balance at 31 December 1991		157,747		92,568
		191,552		125,348
Represented by:				
Barrington Trust Fund Investment				
Charity Fund 111.57 COIF Income shares		577		577
Stevens Bequest Fund Investment				
Freehold Property (Building Plots)	85,000		90,000	
COIF No. 2 Account	72,485		—	
		157,485		90,000
Fixed assets				
Projection equipment		100		100
Current Assets				
Stock of *Bulletin*	100		100	
Stock of ties	300		—	
Cash in Hand	44		41	
Cash at Bank—Barclays Prime Account	6,007		3,810	
—Lloyds Current Account	2		59	
—Lloyds High Interest Account	—		3,914	
—Post Office Giro Account	37		114	
—COIF Deposit Account	35,564		33,484	
Sundry Debtors	291		15	
		42,345		41,537
Current Liabilities				
Subscriptions received in advance				
—Members (1992–1994)	1,998		1,572	
—Non-member Subscribers	1,404		899	
Sundry Creditors	5,553		4,395	
		(8,955)		(6,866)
		191,552		125,348

AUDITORS' REPORT

To the Members of

BRITISH ORNITHOLOGISTS' CLUB

We have audited the financial statements in accordance with Auditing Standards.

In our opinion the financial statements give a true and fair view of the state of the Charity's affairs at 31 December 1991 and of its Income and Expenditure for the year then ended.

Prince Albert House,
20 King Street,
Maidenhead, Berks
5 May 1992

DONALD REID & CO.,
Registered Auditors

Approved by the Committee on 19 May 1992
R. E. F. PEAL, Chairman

On the vocal behaviour and habitat of the Maned Owl *Jubula lettii* in south-western Congo

by Françoise Dowsett-Lemaire

Received 17 October 1991

From the scattering of existing specimens the Maned Owl *Jubula lettii* appears fairly widely distributed in the Guineo-Congolian Region (Colston, *in* Snow 1978), but its biology and voice have so far remained unknown. From a few observations and captures over 20 years in north-eastern Gabon, Brosset & Erard (1986) believed that this species was restricted to primary rain forest particularly rich in lianes. During a 6-month ecological study of the Kouilou basin of southwestern Congo (Dowsett & Dowsett-Lemaire 1991), I found that *Jubula lettii* was, on the contrary, exclusively tied to the vicinity of water, and reached very high densities in both permanently and seasonally flooded forest. It was extremely noisy throughout the rains, which made it relatively easy to census. Presumably its confinement to swampy habitats, often difficult of access, explains why it had remained so poorly known. This paper describes for the first time the voice and vocal habits of territorial adults; the densities observed in wet forest may be the highest so far recorded for any African owl.

The study area

Field work was carried out from mid-August 1990 to the end of January 1991, and for a week in mid-April 1991, in the lower Kouilou basin of Congo, from the coast to the Mayombe mountain chain which starts *c.* 40 km inland. The altitudinal range is 0–670 m, but most land in the sublittoral plains lies below 100 m. Four main habitats occur in the region: dry-land rain forest (continuous in the Mayombe, and in a forest-savanna mosaic nearer the coast), seasonally flooded forest (*c.* 600 km^2 in the lower basin), papyrus-*Raphia* swamp and savanna grassland.

Co-ordinates of the four localities where *Jubula* was recorded are: 04°02′S, 11°50′E (Béna, in the western Mayombe); 04°16′S, 11°47′E (Ménengué); 04°19′S, 11°47′E (Koubotchi); 04°31′S, 11°53′E (Lac Titina). The last three sites are all in the sublittoral plains, 10–20 km inland, where a dry-land mosaic of sandy savanna and rain forest surrounds extensive flooded forest. The vegetation at Béna is mainly secondary rain forest, with swampy palm forest along streams.

Koubotchi was visited monthly (2–8 days) from late August to January; Béna and Ménengué for several days each month from September to December, also in April; and Lac Titina only once, in November. Several other sites of dry-land rain forest were explored in the Mayombe from September to January (and also during an earlier visit in May–June 1989), but no *Jubula* were recorded there.

The rains normally start in October and end in May, the period of flooding lasting from November until May or June. Detailed accounts of the vegetation and avifauna of the area are published elsewhere (Dowsett-Lemaire 1991, Dowsett-Lemaire & Dowsett 1991).

Vocal behaviour

Jubula lettii was completely silent in late August–early September at Koubotchi (8 nights), the first song was heard at Béna on 13 September (on one of 4 nights there), and singing was still infrequent in late September (2 nights of mild activity out of 7, Ménengué). By early November, when the forests started to flood, *Jubula* became extremely noisy, calling at all hours of the night and sometimes even by day, and remained very active until my last check in January. During a short visit in April 1991, several were heard singing (Ménengué).

Vocalisations consist of two song-types, in addition to isolated *oo-ooh* notes. The characteristic timbre of all vocalisations is soft for an owl, rather dove-like, and higher-pitched than in the African Wood Owl *Strix woodfordii*. The song of *Jubula* might be confused with that of a dove especially when heard by day (except that no African dove sings exactly like that). At close range the *oo-ooh* notes sound slightly vibrated, but are not modulated as in *Strix*. The modulated and low-pitched *ooh-oowe* note presented by Chappuis (1978) as belonging possibly to *Jubula*, is in my opinion none other than a call of male *Strix woodfordii* (from its pitch, timbre and modulation). Two different *Strix woodfordii* tested in the Mayombe did indeed react to playback of its recording, whereas no *Strix* ever reacted to my numerous playbacks of *Jubula* songs (although it was often present next to *Jubula*). Unfortunately Kemp *in* Fry *et al.* (1988) treats the identity of Chappuis's recording as established fact, despite Chappuis's (1978) clear indication that his identification was only tentative.

Song-type 1 is the more stereotyped of the two and is made up of three sections, an initial *oo-ooh*, a series of 4 to 7 (usually) identical *oo* notes with a slight hesitation after the first, and ends invariably with two notes *oo-ooh, oo*, the first being strongly accentuated (Fig. 1). During excited vocal exchanges with neighbours some birds produce up to 8 notes in the middle section and may repeat the ending once. The whole sequence lasts from 7 to 9 sec. The bird that I recorded at Béna called for several hours (with long intervals of silence), and never varied from the pattern of 1 + 4 + 2 notes. It was probably an unmated male; when I returned to the area in November, a pair was calling together as is usual.

Song-type 2 lasts about the same length, may start with an isolated *oo-ooh* or launch straight away into one or two series of single *oo* (often 5–7), and is usually followed by a variable number (3–5) of double notes *dooloo-dooloo-dooloo* . . . Either song has been heard occasionally during the day, and either may start an exchange between partners. The unmated bird at Béna also gave loud *oo-ooh* notes in isolation (similar to the initial note of song-type 1), and this is also often used in duets. It is possible that song-type 1 belongs to males and 2 to females, but that cannot be tested without collecting calling birds.

As a rule, partners first establish contact at dusk (about 18.40–18.50 hrs in December), the second bird starting its song before the first one has finished. Then they are quiet for a while (20–40 minutes), presumably during a spell of active feeding. They resume song afterwards when more exchanges with neighbouring pairs take place, especially around 19.30–20.00 hrs, but they carry on at all hours of the night until a final duet at dawn. Birds calling by day do so in isolation, apparently from fixed roost sites (one bird at Ménengué was calling from the same spot for several months). The voice never sounds very loud, even at close range, but easily carries 500–600 m, and up to 1 km if one listens from an exposed situation such as a hill outside forest.

Playback experiments were tried on numerous occasions but failed to provoke any answer in September, except once (perhaps by chance). From November, tape playback regularly prompted the nearest one or two pairs into song, but consistently failed to get them to move nearer the source of sound. Calling birds are exceedingly difficult to see as they hide behind tangles of foliage.

In the active participation of both sexes, and especially the general pattern of songs, the nearest relative of *Jubula lettii* in Africa appears to be *Strix woodfordii*. The characteristic dove timbre, however, and details of rhythm and syntax make confusion impossible. On the other hand, the very low raucous voice of the neotropical Crested Owl *Lophostrix cristata* (sometimes considered to be closely related to *Jubula*, *cf.* Brosset & Erard 1986) bears absolutely no relation to that of either *Jubula lettii* or *Strix woodfordii*. It would certainly seem preferable to retain *Jubula lettii* in its own genus.

Habitat and densities

At Ménengué, Koubotchi and Lac Titina, the main habitat occupied by *Jubula* is seasonally flooded forest, with a canopy 30–35 m tall. The more common trees are *Ctenolophon englerianus, Sacoglottis gabonensis* and *Vitex doniana*; some have well-developed stilt-roots (*Uapaca guineensis, Xylopia rubescens*). Except in gaps filled by low thickets, the understorey is fairly open, with little herbaceous growth, but many saplings or small trees (mainly of Melastomataceae, *Martretia quadricornis, Raphia* sp.). Large lianes are less abundant than in adjacent dry-land rain forest. *Jubula* also inhabits the permanently flooded forest on the fringes of lakes (L. Titina, L. Nanga at Ménengué), which has a more open canopy dominated by *Chrysobalanus icaco* (Dowsett-Lemaire 1991). About 120 species of birds live in these wet forests, of which the more characteristic (and often quite numerous) include the Tiger Heron *Tigriornis leucolophus*, Grey-throated Rail *Canirallus oculeus*, Bouvier's Fishing Owl *Scotopelia bouvieri*, Bates's Nightjar *Caprimulgus batesi*, Shining-blue Kingfisher *Alcedo quadribrachys*, Black-headed Bee-eater *Merops breweri* and White-browed Forest Flycatcher *Fraseria cinerascens* (Dowsett-Lemaire & Dowsett 1991). *Strix woodfordii* is common in adjacent dry-land rain forest, and ventures only marginally into flooded forests.

At all three sites of flooded forest, densities of *Jubula* as judged by the location of calling pairs in November–January are extremely high. At

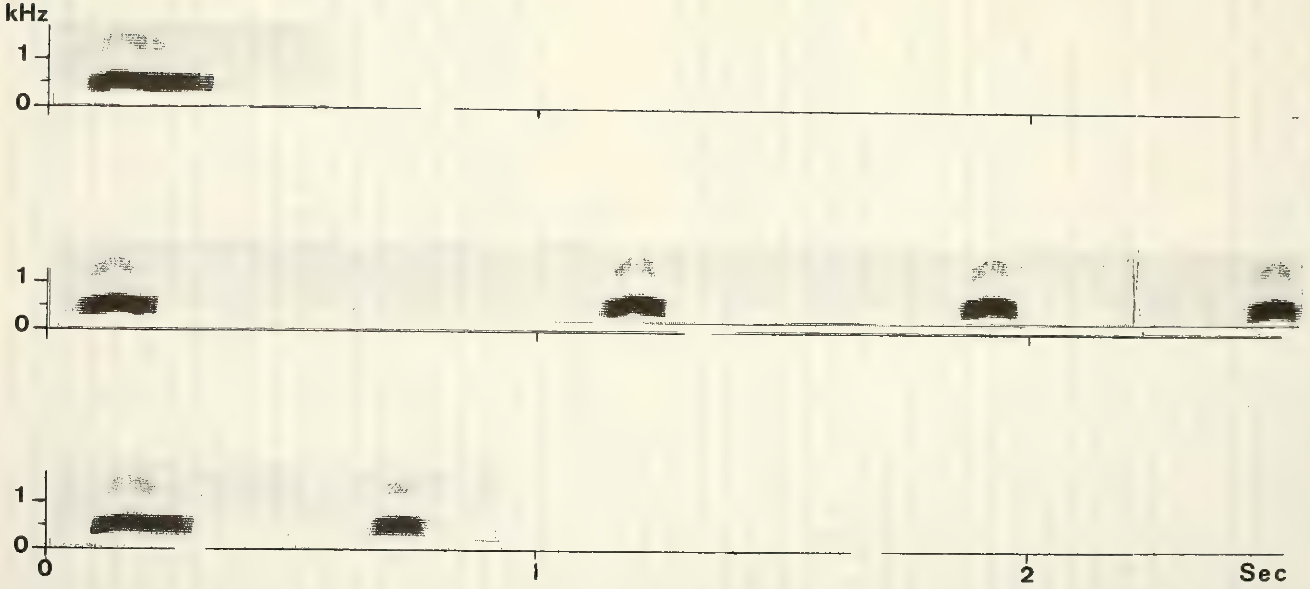

Figure 1. Main song-type of *Jubula lettii* (song-type 1, in 3 sections) recorded at Béna (Mayombe). Intervals between first note and middle section and between this and last two notes are just over 2 sec each.

L. Titina as many as six duetting pairs could be heard simultaneously. At Koubotchi 25 ha of flooded forest were occupied by four pairs, giving overall densities of 16 pairs/km^2. At Ménengué where the forest is floristically less diverse, densities were 6 to 8 pairs/km^2 (measured over 2 km^2). Taking the latter figure, the 600 km^2 of flooded forest in the area could hold at least 4000 pairs of *Jubula*.

In the Mayombe, the preferred habitat is far more local and so is the owl: a few pairs are present in the Béna area, along narrow swampy sections of palm forest (*Elaeis guineensis, Raphia hookeri*) bordering streams; other tree species (such as *Sterculia tragacantha*) are mainly of secondary forest. The owls seem immune to heavy human disturbance caused by villagers collecting palm wine.

On occasion *Jubula* does visit dry-land forest away from its territory. At Ménengué, a 12-ha patch of dry secondary forest isolated in the middle of grassy savanna was regularly visited (at least every other night) by one or the other member of a pair living in the swamp forest below, judging by calls and the sighting of a bird at dusk flying across the 300-m gap. I once played a tape of song-type 1 after a bird had advertised its presence with song-type 2, and it left promptly to return and call with its mate down below.

R.J. Dowsett and I set up a net once over flooded forest and found a feather of *Jubula* in the bottom shelf just over the water; a bird at dusk was on one occasion seen flopping its wings rather noisily against a wall of leaves on the edge of forest, perhaps to flush prey. The high densities observed could be related to an insect diet, as is suggested by the limited data available from stomach contents elsewhere (Chapin 1939, Brosset & Erard 1986). Densities of up to 16 pairs/km^2 are undoubtedly the highest for any forest owl, and in wooded savanna only the small insectivorous African Scops Owl *Otus senegalensis* can approach such figures in optimal habitat (pers. obs. in Malawi). The only published account of densities in *Strix woodfordii* is from riparian forest in northern Transvaal, where there are 1–2 pairs/km^2 (Kemp & Kemp 1989).

Acknowledgement

The ecological study of the lower Kouilou basin was conducted on behalf of the petrol company Conoco Congo Ltd, who generously financed the field work.

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Taxonomic comment on southeastern representatives of two wide-ranging African cisticolas

by P. A. Clancey

Received 1 November 1991

Conclusions arrived at from studies of material in southern African collections of southeastern populations of two wide-ranging Afrotropical cisticolas, namely the Pale-crowned or Pectoral-patch Cisticola (Sibley & Monroe 1990) *Cisticola brunnescens* and the Rattling Cisticola *C. chiniana*, are presented hereunder. In both instances new subspecific taxa are introduced.

Cisticola brunnescens Heuglin, 1862

Such material as is available reveals that two forms of cloudscraper cisticola of *C. brunnescens*-type occur along the southeastern littoral of the Southern African Subregion between the eastern Transkei and the Limpopo R. flood-plain of southern Mozambique. One of these corresponds with the southernmost of the two subspecies of *brunnescens* currently recognised from regions lying to the south of the Zambezi, namely, *C. b. egregius* (Roberts), 1913: Wakkerstroom, southeastern Transvaal, whereas the second is undescribed. Structurally this innominate form does not differ from *C. brunnescens*, but is somewhat smaller than *egregius*, in addition to being markedly darker in colour and strikingly streaked with black dorsally. As both have been collected alongside one another during the southern winter months, as at Fossil Head Reserve, eastern Transkei, and again on the Limpopo flood-plain, the possibility that discrete sibling species rather than conspecifics are involved in this instance requires to be addressed.

Firstly, only birds of *egregius*-type are known from the breeding grounds of *C. b. egregius* on the plateau of the Transvaal and upper Natal and the lowlands of Mozambique to the east at the same time, while those of the innominate form are entirely coastal and of seemingly sedentary disposition. Maclean (1985) has, however, drawn attention to the fact that in the grasslands of the Natal midlands (elevations not given), the Pale-crowned Cisticola is "a summer breeding visitor only", yet the Durban Natural Science Museum collection has a specimen dated 11 July from near Mooi River, in the Natal midlands, at *c.* 4500 ft a.s.l., this of *egregius*-type. Analogous phenotypes, some with comparable dates, both from interior Transvaal and coastal localities are as follows: "Devils Knuckles" and "Krantzview", Barberton (13 and 29 May), Belfast, Wakkerstroom and Volksrust, and on the lowlands to the east at Incoluane (25°04′S, 32°56′E) (3 May), this particular specimen with an inordinately long tail of 41.5 mm, and from Chicumbane, Limpopo R., Mozambique (4 June). A coastal specimen taken somewhat later is a ♀ from Fossil Head Reserve, Transkei (4 August).

In the dark, blackish dorsally striated innominate form, two samples of 4 ♂♀ specimens from Bangazi North, Lake St Lucia, Zululand (27°39′S, 32°38′E) are dated 10 and 25 July, 1986 and 1987, and two (♂♀) from Msinyeni Pan, Pongola R. 19 July, while two further ♂♂ from near Mtubatuba, Zululand (8 June) are comparable. A still earlier bird is one taken at Redhill, Durban, in April. From further north, the longer series from Chicumbane, Mozambique, comprises three examples of the light interior country phenotype—the dates for the entire series are 2–4 June 1971. Specimens taken later in the year are a ♂ from Fossil Head Reserve, Transkei, dated 1 August, and a moulting ♂ taken on a disused airfield at Stamfordhill, Durban, on 19 September 1961.

The available data support the view that lightly streaked birds breed in the grasslands of the southeastern plateau up to 5000+ ft a.s.l., with some present—presumably migrants—on the littoral to the immediate east from early May through to September. On the other hand, dark birds with heavily streaked upper-parts are seemingly confined to the littoral. The two forms may be collected alongside one another, as at Fossil Head and on the lower Limpopo flood-plain, in which latter locality the Pale-crowned Cisticola is by far the commoner of the two small cloudscrapers present in the dry austral winter months, the other being the Fantailed Cisticola *Cisticola juncidis terrestris*.

The *prima facie* impression that two discrete *Cisticola* spp. might be involved was lent a measure of credence by the treatment of *C. brunnescens* in Hall & Moreau's *Atlas of Speciation* (1970), which depicts all recognised subspecies as being forms of more or less moist continental plateaux and highlands, with humid coast seemingly eschewed by the species. These factors notwithstanding, and allowing for the finding of a local tendency to migrate and a much wider level of altitudinal and ecological tolerance on the part of the present cisticola than previously established, two races of a single species require to be recognised, one breeding in the grasslands of the southeastern edge of the continental plateau of south-eastern Africa and the other along the coast; in this unique. Elements of the interior form spend their off-season within the breeding range of the littoral birds, which, lacking a name, may take the trinomen

Cisticola brunnescens taciturnus subsp. nov.

Type. ♂ adult. Lalapanzi Game Ranch, near Mtubatuba, Zululand, Natal; 8 June 1982. Collected by J. C. Sinclair. In the collection of Durban Natural Science Museum, D. M. Reg. No. 33 847.

Description. In non-breeding dress (May–July) differs from *C. b. egregius* in that the coronal shaft-streaks are much broader and deep black rather than dark brown; hind-neck more streaked with black on a lighter, less rufescent, ground, and mantle and scapulars Ochraceous-Buff rather than Buckthorn Brown (Ridgway 1912), with broader deep black shaft-streaks, the outer vanes of the lateral mantle feathers edged with white, as against light buffy olivaceous in *egregius*; rump Buckthorn Brown rather than Sudan Brown, and more invaded and streaked with fuscous. Underside whiter, with reduced buff wash laterally, and lateral breast surfaces largely immaculate. Wings duller; central rectrices of tail with broader, blacker medial streaks. First primary >12 mm. Size ranging smaller.

In breeding dress, adult male does not assume a blackish wash to the distal face and shows no development of a conspicuous streaked patch on either side of the upper breast. In recent material of *egregius* from the Natal midlands and East Griqualand males show prominent streaked pectoral patches and blackish obfuscation to the lores and distal orbital surfaces.

Measurements (mm). Wings of 7 ♂♂ 48.5–53 (50.4), s.d. 1.56; tails 34–37 (35.4), s.d. 1.09. Wings of 7 ♀♀ 46–48 (47.3), s.d. 0.69; tails of 3 35–37 (36.3). First primaries 12–15 (13.3) mm in 10 measured. Weights: 4 ♂♂ 10–10.8, 3 ♀♀ 8.5–9.5 g.

Measurements of the type. Wing (flattened) 51.5, culmen from base 12, tarsus 23, tail 37 mm.

Material examined. 19—**Transkei**: Fossil Head Reserve, Mzamba; **Natal**: Vernon Crookes Nature Reserve (south coast), Redhill and Stamfordhill, Durban; **Zululand**: Nhlabane (Richards Bay), Mtubatuba district, Mziki (Phinda), Bangazi North (Lake St Lucia), Msinyeni Pan (Pongola R.); **Mozambique**: Manhiça, Chicumbane (Limpopo R. flood-plain).

Range. The coast and immediate interior of southeastern Africa from eastern Transkei, Natal and Zululand to Mozambique as far as the Limpopo R. flood-plain. Birds undertaking high aerial cruises, terminating by plummeting to ground grass-cover, have been observed at Vernon Crookes Nature Reserve, just back from the coast in southern Natal, and breeding birds have recently been obtained at Nhlabane and Mziki, Phinda, in Zululand (15 January and 6 March 1992). A skin in breeding dress (27 September 1955) is also available from Manhiça, Mozambique, at 25°24′S, 32°48′E.

Etymology. From Latin *taciturnus*, silent, in allusion to one of the species' vernacular names, the Silent Cloud Cisticola.

Remarks. Of fundamental zoogeographical import is that in the south of its range *C. brunnescens* is, in the case of the subspecies *C. b. egregius* of the high interior grasslands, allopatrically interposed between two races of the Cloud Cisticola *Cisticola textrix* (Vieillot), 1817, namely *C. t. major* and *C. t. marleyi*, whereas the humid coastal *C. b. taciturnus* is geographically sympatric with *C. t. marleyi* in parts of southern Mozambique and the northeast of Zululand. This points to the possibility that two siblings and not a single unitary species are involved in the two populations currently grouped in *C. brunnescens* to the south of the Limpopo.

The observation made by McLachlan & Liversidge (1970) that in southern Africa *C. brunnescens* in the course of its descent from its aerial cruise "does not give (audible) wing snaps, although it does so elsewhere," may have some bearing on the nature of the issues dealt with in this note.

Wing-lengths (mm) of the other two subspecies of *C. brunnescens* occurring in Africa south of the Zambezi are as follows:

C. b. egregius, 11 ♂♂ 52–55 (53.3), s.d. 1.26; 4 ♀♀ 47.5–49 (48.3). *C. b. cinnamomeus*, 2♂♂ 52, 53; 4 ♀♀ 46–47.5 (47.0). *C. b. cinnamomeus* is comparably dark and heavily streaked as in *C. b. taciturnus* but on a redder or more saturated tawny ground. The tawny-buff wash to the breast and lateral surfaces, including the flanks, is also deeper in tone. In size it is similar to *taciturnus*.

Cisticola chiniana (Smith), 1843

The International Commission on Zoological Nomenclature mandated in 1985 that compound generic names terminating in *icola* are in future to be construed as of masculine gender. According to this ruling, the specific name of the Rattling Cisticola, introduced as *Drymoica chiniana* A. Smith, 1843, would, if *chiniana* were viewed as an adjective, have to become *Cisticola chinianus*. The name *chiniana* is, however, not adjectival but seemingly derives from the old Tswana name *Ishwenyane*, formerly used by native peoples for a range of hills near the present town of Zeerust in the western Transvaal (see Cole 1990). In the circumstances, *chiniana* as proposed by Smith is to be treated as a noun in apposition, the binomen of the Rattling Cisticola remaining as *Cisticola chiniana; cf.* Sibley & Monroe (1990).

A re-examination of the geographical variation of this cisticola in southeastern Africa reveals that the dark southern taxa *C. c. chiniana*, the type-locality of which is Zeerust, and *C. c. campestris* (Gould), 1845: Durban, Natal, require to be viewed as centred on the thorn-country of the immediate northern and eastern aspects of the Drakensberg montane system of southeastern Africa. Nominate *chiniana* breeds no further north than the limits of the plateau of the Transvaal, and *C. c. campestris* reaches its range limits in the north on the littoral of Mozambique at *c.* 22°S.

In sharp contrast to these findings, Irwin (1981), in his seminal *Birds of Zimbabwe*, records that in Zimbabwe *C. c. chiniana* has in the breeding dress the "crown only reddish, the back rather heavily streaked [with blackish brown] and edged with buff or pale brown." The Zimbabwean range is then given as "the Sabi Valley, the south-east lowveld and the Limpopo Valley westwards to the Ramaquabane R." (at 21°33′S, 28°01′E). Adequate recent samples from the Thabazimbi district, Swartruggens, Groot Marico and other localities in the western Transvaal, and topotypical of nominate *C. chiniana*, differ markedly from the referred Zimbabwean population, having the dorsal streaking much heavier, and the coronal and hind-neck surfaces dull vinaceous or purplish-brown with broad dark shaft-streaking, and not bright sandy or ochraceous-rufous, and lack the zoned colour pattern described for

Zimbabwe birds. Series available in Durban show that elements agreeing with those of Zimbabwe in having light rufous head-tops and hind-necks and greyish finely streaked backs extend west to the Thornveld Kalahari of eastern Botswana, where some examples even approach *C. c. frater* Reichenow, 1916: near Windhoek, Namibia, to result in the listing of the latter from southeastern Botswana (see Clancey 1990). This the outcome of a measure of introgression rather than any movement in the Namibian subspecies, *frater*. From the formal taxonomic point of view it is desirable to view *frater* as being a purely Namibian subspecies in future, the southeastern Botswanan population referred to it being incorporated into what is in effect an undescribed taxon, which may be known as

Cisticola chiniana vulpiniceps subsp. nov.

Type. ♂ adult. Humani Ranch, Sabi R. valley, southeastern Zimbabwe, at 20°30′S, 32°16′E; 6 July 1973. Collected by Durban Museum personnel. In the collection of the Durban Natural Science Museum, D.M. Reg. No. 29 235.

Description. Differs from nominate *C. chiniana* in freshly assumed non-breeding dress (May–July) in having the crown and hind-neck less heavily streaked with Sepia, the ground redder (Sudan Brown or more ochreous, *versus* vinaceous Cinnamon-Brown); mantle and scapulars with shaft-streaking finer, the feather-fringes buffier or greyer, less vinaceous. On the underside, starkly whiter over the fore-throat and mid-ventral plane, with reduced buff suffusion over the breast and lateral parts, this latter tending to be greyer or slightly olivaceous. In tail, rectrices more ochraceous, but light terminal spots less rusty tinged. Size ranging smaller (see Table 1).

Material examined. 70—**Botswana**: Molepolole–Letlhakeng road (at Dithejwane Hills, Magagarape Hill and Morobane); **Zimbabwe**: near Bulawayo, Humani Ranch (Sabi R. valley); **southern Mozambique**: Vilanculos, Mapinhane, Panda, Rumbaçaça at 21°47′S, 35°07′E; **eastern Transvaal lowveld**: Malamala Game Ranch, near Newington; **eastern Swaziland**: Big Bend, Lubuli (near Nsoko).

Range. Eastern Botswana south of *C. c. smithersi*; southern, central and eastern Zimbabwe to about 20°30′S in east; southern Mozambique from about the same latitude north of the Save R., south to the Limpopo basin back from the littoral; the eastern bushveld regions of the Transvaal, and the contiguous eastern lowlands of Swaziland to the west of the Lebombo Mtns, south to about the Pongola R. Intergrades with the *C. c. chiniana* from Gaborone south, in southeastern Botswana.

Measurements of the type. Wing (flattened) 62.5, culmen from base 16, tarsus 20, tail 53 mm.

Etymology. *Vulpiniceps*—from Latin *vulpinus*, foxlike, and *caput*, head; that is, having the head-top and hind-neck fox-red in colour.

Remarks. In relatively unworn breeding dress, *C. c. vulpiniceps* has the pileum and hind-neck well-differentiated from the mantle and scapulars, which average lighter and greyer than nominate *chiniana*, the dark shaft-streaking finer. The head and neck retain a reddish nuance.

Irwin (1981) found "birds from most of the central plateau [of Zimbabwe] difficult to place subspecifically as they occupy a position along a multiple cline." In non-breeding dress this population is seemingly less reddish than in *procerus*, but in nuptial plumage dark brown above and indistinctly streaked, in this clearly inclining towards the latter race, which penetrates into northern Zimbabwe as far west as the Kariba basin. Irwin felt that it inclined to the hygric Angolan race *C. c. fortis* Lynes, 1930, but it is here seen as comprising in the main *C. c. vulpiniceps* ≶ *procerus* intergrades.

The populations of the Rattling Cisticola present in the Southern African Subregion are viewed as entirely sedentary, but the taking of specimens of as many as three subspecies (*C. c. chiniana, C. c. vulpiniceps* and *C. c. smithersi*) at a single locality during the course of dry season collecting trips, as at Mkien, near Bulawayo, southwestern Zimbabwe, suggests that this may not be so, especially in the case of birds breeding in the desertic parts of the plateau. Samples studied from eastern Zimbabwe and the lowveld of the eastern Transvaal also support the conclusion that elements of some populations are prone to seasonal shifts in the face of the onset of deleterious environmental factors, such as drought and intense southern winter cold. In the south of its range at least, *C. chiniana* is not entirely sedentary. This is, of course, also true of a range of small insectivorous passerines, including other cisticolas, which breed well into the interior of the South West Arid Zone.

With the proposal of the new subspecies *C. c. vulpiniceps* the characters and ranges (Fig. 1) of the contiguous forms may be summarized as follows:

C. c. campestris

Much as in *C. c. chiniana*, but a trifle more olivaceous and less heavily streaked over the upper-parts. Distinguishable in having the underside whiter, the breast, sides and flanks inclining to greyish or dull olivaceous-buff. Similar in size. *Range*: the midlands and coastal regions of Natal, Zululand, and the littoral of Mozambique as far north as 22°S.

C. c. chiniana

Crown to lower back heavily streaked with Sepia, the feathers edged vinaceous Cinnamon-Brown. Underside white, strongly washed with Warm Buff over breast, sides and flanks. Size large (see Table 1). *Range*: the plateau of the Transvaal, generally north of the high-veld, and southeastern Botswana (mainly intergrades towards *vulpiniceps*).

C. c. vulpiniceps

Dorsal streaking as in *campestris*, but ground-colour of vertex and hind-neck rufous or ochraceous-rufous and edging of back feathers buffier (wearing to greyer). Ventral surfaces as in *campestris*. Ranging rather smaller in size (see Table 1). *Range*: as given above.

C. c. procerus

More uniform and redder Cinnamon-Brown dorsally than the previous three, and dark shaft-streaking suppressed. Wings and tail redder and shorter in male (see Table 1); rectrices also broader. In breeding dress wholly darker brown and virtually unstreaked over the upper-parts.

TABLE 1
Wing- and tail-lengths of the four subspecies of *Cisticola chiniana* in the eastern half of southern Africa

Subspecies (south to north)		Wing			Tail (non-breeding)	
	n	range	mean, s.d.	n	range	mean, s.d.
campestris						
♂♂	12	63.5–70	65.5, 2.5	6	58–68	61.3, 3.6
♀♀	13	50.5–56.5	52.7, 1.8	11	44–53.5	48.0, 3.2
chiniana						
♂♂	21	63–70	66.0, 2.3	14	57.5–66	62.0, 2.6
♀♀	10	52.5–56.5	54.5, 1.2	7	50.5–54	53.0, 1.4
vulpiniceps						
♂♂	12	61–67.5	64.1, 2.4	12	53–62	57.8, 2.9
♀♀	10	51–55	53.4, 1.3	10	47–53.5	49.5, 2.2
procerus						
♂♂	12	60.5–67	64.5, 2.0	8	50–57	53.5, 2.3
♀♀	4	54–57	55.7, 1.3	4	45–51	49.0, 2.7

Notes. The sexual size-differential declines from south to north, and in the case of *C. c. procerus* the tail-length in males drops appreciably compared with the other races, whereas females are scarcely affected. The large standard deviations present in the *C. c. campestris* (a littoral race) tail-length samples are also relevant. Females of nominate *chiniana* average longest tails. Comparable data for the western races *C. c. frater* and *C. c. smithersi* are given in Clancey (1990).

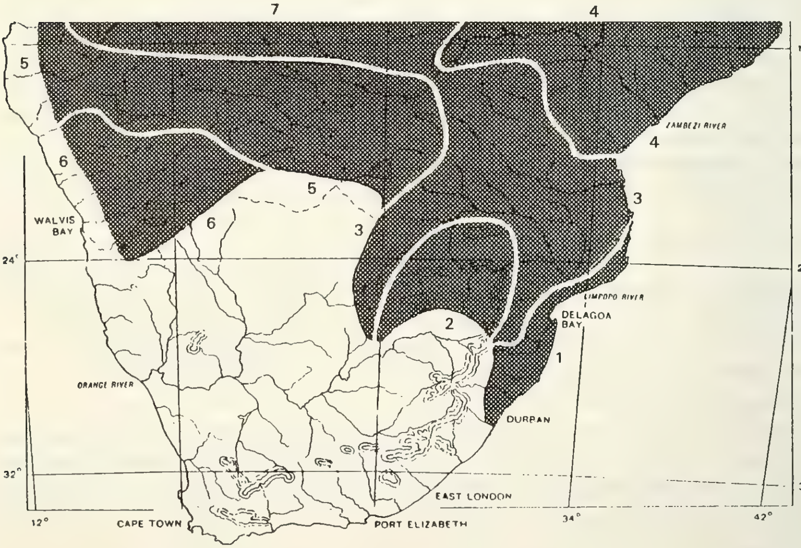

Figure 1. Sketch-map of southern Africa showing the disposition of the subspecies of the Rattling Cisticola: 1, *Cisticola chiniana campestris* (Gould); 2, *Cisticola chiniana chiniana* (Smith); 3, *Cisticola chiniana vulpiniceps* Clancey; 4, *Cisticola chiniana procerus* Peters; 5, *Cisticola chiniana smithersi* Hall; 6, *Cisticola chiniana frater* Reichenow; 7, *Cisticola chiniana bensoni* Traylor and unallocated populations.

Range: Mozambique north from about the Buzi R. (at 20°17′S), northeastern Zimbabwe, west to the Kariba basin, eastern and northeastern Zambia, Malawi, and southeastern Tanzania, south from about Morogoro.

Note. The names *C. c. mocuba* 1933 and *C. c. emendata* 1944, both of Vincent, are synonyms of *C. c. procerus* Peters, 1868: Tete, Mozambique (see White 1960).

Acknowledgements

For the loan of additional material I am indebted to the authorities of the Transvaal Museum, Pretoria (Dr A. C. Kemp). Dr Aldo Berruti, Ornithologist of the Durban Natural Science Museum, also kindly assisted by collecting additional breeding examples of *C. b. taciturnus* in Zululand in January and March 1992.

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A new species of mountain finch *Leucosticte* from western Tibet

by C. S. Roselaar

Received 23 December 1991

When searching for Snow Finches *Montifringilla nivalis*, to be used for the *Handbook of the Birds of Europe, the Middle East and North Africa* (*BWP*), in a mixed drawer of *Montifringilla* and *Leucosticte* in the collection of the Zoological Museum of Amsterdam (ZMA), I came across two specimens of mountain finch labelled *L. brandti* which did not fully conform to the characters of the other *L. brandti* present. The birds were collected by J. A. Sillem during the Netherlands Karakorum Expedition 1929–1930 on 7 and 8 September 1929 on the plateau between the upper

Kara Kash and the upper Yarkand River, *c.* 40 km ESE of the Karakoram Pass (expedition's camp 58) in the disputed area of western Tibet, at an altitude of 5125 m. One bird, collected 7 September, is a heavily worn adult which had just started moult; the other one, collected 8 September, is a young bird with body in juvenile plumage but wing and tail still growing. Both differ from adult and juvenile *L. brandti pallidior* collected on the same dates in the same locality in showing drab-grey flight-feathers with hardly contrasting paler grey outer fringes (instead of blackish feathers with a distinct white fringe) and whitish rather than greyish bellies; the adult has top and side of head and neck tawny-cinnamon, without the black shown by *L. brandti*, and cinnamon-buff instead of smoke-grey chest, side of breast, and flank; the juvenile bird has upperparts buff with obvious dusky brown shaft-streaks, the latter extending to side of head, breast, and upper flank, and thus is far more heavily streaked than juvenile *L. brandti*. Though one may hesitate to describe a new species from a single worn adult and a not full-grown juvenile, comparison of both birds with *c.* 400 specimens of *L. brandti* as well as a great number of specimens of other related and unrelated mountain birds of *Leucosticte, Kozlowia, Carpodacus* and *Montifringilla* in the collections of the museums of Amsterdam, Berlin, Bonn, Dresden, Leiden and Tring shows that the characters of the new species are valid.

Leucosticte sillemi sp. nov.

Type. ZMA 43449, adult male, collected 7 September 1929 by J. A. Sillem at Kushku Maidan, Netherlands Karakorum Expedition Camp 58, 35°26′N, 78°13′E, in western Tibet at an altitude of 5125 m. Plumage heavily worn, but inner primaries, most upper wing-coverts, and central pairs of tail-feathers new.

Para-type. ZMA 43450, juvenile male, collected 8 September 1929, plumage fully juvenile, wing and tail still growing, further data as in type specimen.

Description (colour names based on Smithe 1975, 1981)

Adult male. Top and side of head and neck bright tawny-cinnamon, slightly paler towards lower neck, and with some pale buff showing at base of bill. Mantle, scapulars and back drab-grey, extreme tips of feathers washed buff (probably due to abrasion); unstreaked. Rump and upper tail-coverts isabelline-white with slight grey wash on feather-centres. Chin, throat, breast, and side of breast pale cinnamon-buff; remainder of underparts white with slight isabelline or pale yellow-buff wash, latter most pronounced on flank. Due to abrasion of feathers, dark neutral grey feather-bases are partly exposed on body, especially on upperparts. Tail dark drab-grey, outer webs and tips bordered by white fringes *c.* 1 mm wide; fringes faintly tinged pale pink-buff in fresh plumage, partly or fully worn off in abraded plumage. Flight-feathers dark drab-grey, outer webs narrowly and indistinctly fringed paler drab-grey; fringes of outer 3 primaries whitish, but narrow and ill-defined; tips of secondaries and of inner primaries with ill-defined off-white margin. Upper wing-coverts and tertials medium drab-grey, basal and middle portions of inner webs of greater coverts and tertials more sooty grey or blackish, outer webs of greater coverts slightly washed pale pink-cinnamon. Greater upper primary coverts and bastard wing dark drab-grey, gradually darker towards sooty grey or blackish tips, outer webs narrowly fringed medium drab-grey. Under wing-coverts and axillaries white. Colours of bare parts not recorded. Differs from *L. brandti* of local race *pallidior* in same stage of wear in tawny-cinnamon head and neck, without black on forehead and without sooty grey on side of head or neck; unstreaked lower mantle and scapulars; off-white instead of drab-grey rump and upper tail-coverts, without traces of pink fringes; buff instead of drab-grey chin to breast; off-white instead of light drab-grey belly; drab-grey instead of blackish tail (but colour and extent of white fringes similar); drab-grey instead of blackish flight-feathers and greater upper primary coverts, with scarcely contrasting paler grey fringes, instead of strongly contrasting white fringes; different wing/tail ratio (see below).

Juvenile male. Upperparts almost entirely marked with close pink-buff and dark grey-brown streaks; rump less conspicuously streaked pale buff and pale grey-brown; upper tail-coverts almost uniform drab-grey, streaks faint. Side of head and neck closely mottled off-white or pale buff and grey-brown. Chin white; throat to breast and upper flank white with broad but ill-defined grey-brown shaft-streaks; remainder of underparts white with isabelline or pale yellow-buff wash, most pronounced on flank. Lesser and median upper wing-coverts drab-grey with ill-defined pale cinnamon-grey tips; remainder of wing and all tail as adult male. "Bill orange" (from label). Differs from juvenile *L. brandti pallidior* in heavily streaked upperparts (in *L. brandti*, narrow but distinct streaks restricted to lower mantle and scapulars); pale rather than medium drab-grey upper tail-coverts; uniform white chin but streaked throat to breast (in *L. brandti*, chin faintly streaked dusky but throat to breast uniform pale drab-grey with isabelline wash), almost pure white instead of dirty light grey belly; dark drab-grey instead of blackish tail- and flight-feathers; medium drab-grey instead of white fringes along outer webs of flight-feathers.

Measurements and structure

For measurements of *L. sillemi* and males of some other species see Table 1; for wing/tail ratio of *L. sillemi* and some other mountain finches of about similar size see Figure 1. Outer wing- and tail-feathers of the type specimen are somewhat abraded, but no more than *c.* 1 mm of the tips seems to be missing and this does not influence wing/tail ratio to a great extent. Primaries 7 and 8 (counted descendently) of the adult are about equal in length and form the tip of the wing, p 9 is 1 mm shorter, p 10 42 mm; this wing formula is similar to those of *L. brandti* and Roborowski's Rosefinch *Kozlowia roborowski*. Tail is slightly forked, as in *L. brandti*. Bill is similar in shape to *L. brandti*, thus distinctly more slender than any *Carpodacus* (except the much smaller Dark Rosefinch *C. nipalensis*); bill of *Kozlowia* is equally slender, but the tip is somewhat more pointed. Leg and foot are as in *L. brandti*, but the tarsus is shorter; tarsus of *Kozlowia* is about equally short, that of all *Carpodacus* with a wing-length comparable to *L. sillemi* is distinctly longer.

TABLE 1

Measurements of males of *Leucosticte* and *Kozlowia* in sequence: mean (standard deviation; sample size) range

	Leucosticte nemoricola	*Leucosticte arctoa*	*Leucosticte brandti*	*Leucosticte sillemi*		*Kozlowia roborowskii*
				Type	Paratype	
wing	99.9 (2.06; 29) 97–104	109.6 (2.80; 20) 104–117	120.8 (2.46; 72) 116–125	128	108++	123.5 (1.32; 3) 122.5–125
tail	65.0 (1.85; 28) 62–68	70.6 (2.19; 20) 67–75	75.8 (2.18; 71) 72–80	67.5	53++	72.8 (1.53; 3) 71.5–74.5
wing/tail ratio	1.54 (0.03; 32) 1.47–1.59	1.55 (0.04; 20) 1.47–1.62	1.59 (0.04; 71) 1.51–1.68	1.90	(2.04)+/−?	1.69 (0.05; 3) 1.64–1.72
tarsus	19.4 (0.70; 8) 18.5–20.3	21.3 (0.62; 17) 20.4–22.5	22.7 (0.71; 46) 21.3–23.8	19.7	20.1+?	20.6 (0.62; 3) 20.0–21.2
bill to skull	14.0 (0.58; 8) 13.3–14.6	14.6 (0.51; 18) 13.9–15.5	15.5 (0.63; 47) 14.2–16.8	14.3	12.5++	16.4 (1.32; 3) 15.5–17.6
bill to nostril	8.2 (0.34; 8) 7.7–8.7	8.3 (0.42; 20) 7.7–9.2	9.0 (0.41; 67) 8.3–10.0	9.3	8.1++	11.6 (0.49; 3) 11.0–11.9

Notes. Data for *L. nemoricola* include those of both races; for *L.arctoa* those of nominate *arctoa, giglioli* and *brunneonucha*; for *L. brandti* those of 17 *pallidior*, 19 *haematopygia*, 30 nominate *brandti*, and a few each of *walteri, intermedia, audreyana* and *margaritacea*. One exceedingly long wing of 127 mm in nominate *brandti* excluded from range.

Etymology

Named in honour of Mr J. A. Sillem (1902–1986), the ornithologist accompanying Dr and Mrs P. C. Visser on the Netherlands Karakorum Expedition 1929–1930. The expedition left Srinagar on 2 May 1929 and wintered in Yarkand, studying ornithology, botany and geology there and throughout the journey along the trade route across the Karakoram Range, and visiting many previously unexplored side-valleys. On their return to Srinagar on 12 August 1930 Sillem had collected almost 500 birds. Together with his nephew J. G. van Marle and some of their brothers, Sillem founded the Sillem-Van Marle partnership, a private company for the advancement of ornithological science in the Palearctic. This company brought almost 10,000 bird skins together, partly through expeditions by its members (Ireland, Portugal, Corsica, Rumania, Karakoram, Sinkiang), by financing other people's expeditions (Turkey, Algeria), or by buying parts of collections of others (e.g. of Messrs Snouckaert, Clancey, Harrison, Von Thanner, Dombrowski, Loudon, Tancré, Bamberg and many others). After the death of Mr J. G. van Marle in 1979, the Sillem-Van Marle collection came to the Zoological Museum of the University of Amsterdam through Prof. Dr K. H. Voous, now forming a solid base for the descriptions and the assessment of geographical variation of the *BWP* handbook.

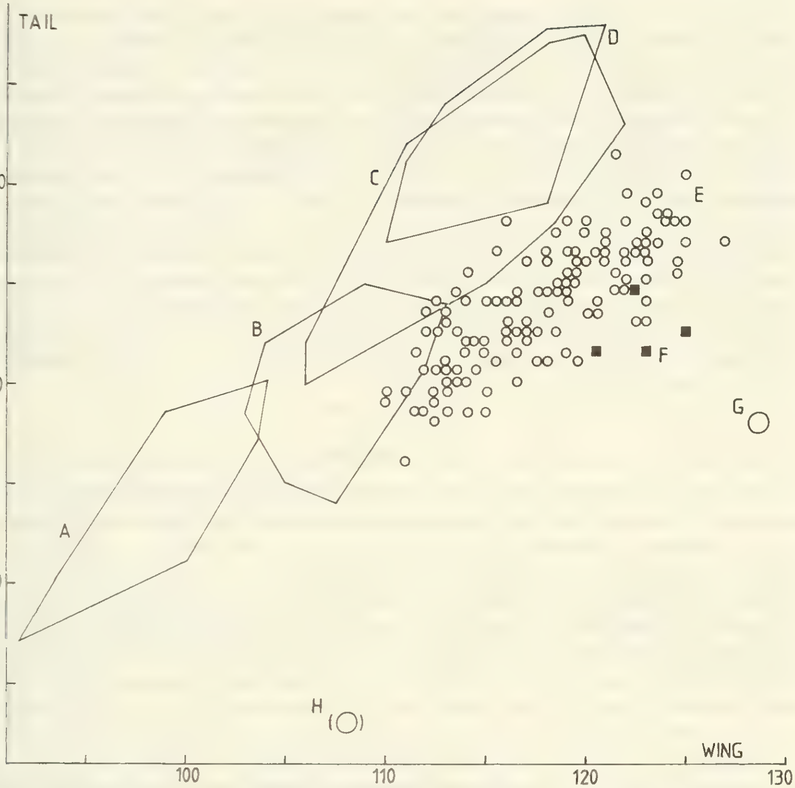

Figure 1. Wing to tail for *Leucosticte* and various other large mountain finches; both sexes included. (A) Outline of individual plots of 57 *Leucosticte nemoricola*. (B) Outline of plots of 30 *L. arctoa* from mainland Asia. (C) Outline of plots of 14 *Carpodacus puniceus*. (D) Outline of plots of 12 *C. rubicilloides*. (E) Individual plots of 124 *L. brandti*, including specimens of all subspecies. (F) Individual plots of *Kozlowia roborowskii*. (G) Type (adult male) of *L. sillemi*. (H) Paratype (juvenile male, not full grown) of *L. sillemi*.

Ornithological notes from the type locality (based on Sillem 1934)

When the Netherlands Karakorum Expedition went eastward along the upper Chip-chap valley and then northward along one of the side-valleys, they entered a part of the eastern Karakoram range hitherto unexplored by earlier ornithologists. During the ascent to the Kara Tagh Pass (*c.* 35°35′N, 78°24′E) very few birds were seen, one day not even a single one, but after crossing the pass and arriving at the Kushku Maidan plateau between the Kara Tagh and Kawak passes, birdlife was more plentiful, especially near some lakes, such as the Kara Tagh lake, Chumiktsaka Tso, and the Tso-Rul Tso. Unfortunately, observations and collecting were severely hampered by bad weather, including snow-storms in the evenings of 6 and 8 September, with temperatures down to −7°C. Even so, Sillem managed to collect 15 birds between 31 August and 14 September while on the Kushku Maidan plateau: *Anas acuta, Calidris temminckii* (2), *Tringa glareola, Actitis hypoleucos, Motacilla alba* (2), *Anthus trivialis, Monticola saxatilis, Carpodacus erythrinus, Leucosticte brandti* (2), *L. sillemi* (2) and *Montifringilla blanfordi*; he observed *Ardea cinerea, Casarca ferruginea, Anas querquedula, Accipiter nisus, Tringa nebularia, T. ochropus, Sterna hirundo* and *Eremophila alpestris*, all at altitudes of over 5000 m. Most birds seen and collected on the plateau were undoubtedly migrants, but both species of *Leucosticte* were not, as a single adult in each was in full moult, each accompanied by a not yet full-grown juvenile. For *Leucosticte*, this moult is not exceptionally late, as adult *L. brandti* examined from elsewhere (e.g. from Nepal, and from Schäfer's collection from east Tibet) also started primary moult about mid-August and completed it in late September, while young birds were in fully juvenile plumage throughout September, not showing body moult to 1st adult plumage until early October.

Discussion

When the two aberrant skins were first noticed among *L. brandti*, some doubts arose as to whether their distinctive characters were really those of a new species or whether they were due to extreme abrasion of adult *L. brandti* or to immaturity. However, examination of *c.* 400 specimens of *L. brandti*, including *c.* 20 fresh juveniles and over 50 adults from August and early September in worn plumage, shows that none ever has drab-grey fringes to the flight-feathers, none of the immatures shows pronounced streaking, and no adult ever has a tawny-cinnamon head and neck without black on at least lore and forehead (except *L. brandti margaritacea* from the Altai, which shows no black, but differs in many other ways from *L. sillemi*). Some freshly-moulted *L. brandti* show extensive tawny on the upperparts and some buff tinge on the white fringes of the wing-feathers (especially in nominate *brandti*) but, unlike *L. sillemi*, much black is hidden beneath the tawny fringes on the forehead and lores, rump and belly are greyer, tail- and flight-feathers are blacker, and the outer fringes of flight-feathers and greater upper primary coverts are white; also, no *L. brandti* shows a wing/tail ratio as high as in *L. sillemi*. It should be stressed that the tawny-yellow of the worn head and neck of *L. sillemi* may not be similar in colour to the fresh plumage of the species: *L. brandti* sometimes shows a similar tawny-cinnamon on the rump, instead of the more usual pink, either due to abrasion or to an individual aberration. *L. sillemi* may have a rosy head and neck in fresh plumage, extending to the upper mantle and breast; however, one would expect that at least some rosy would remain even in heavily worn plumage, and the colour of the crown and side of head of *L. sillemi* is very similar to the tawny-cinnamon on the head of *L. nemoricola*, which, like *L. sillemi*, also shows a reduction of white fringes in the wing but is otherwise very different.

A further point may be of interest. The genus *Leucosticte* consists of a rather heterogeneous assemblage of species which are perhaps not at all closely related; however, they all agree in lacking pronounced sexual dimorphism in colour, while dimorphism is more marked in size of wing and tail (in large samples of each species, wing and tail of the female are 95% of those of the male); juveniles are similar to adults, but are more diluted in colour and the streaking (if any) is more restricted and less distinctly defined. In *Kozlowia* and *Carpodacus*, sexual dimorphism is marked in colour, less so in size (though variable, wing and tail of the female are 94–98% of those of male in the larger species examined), and the juvenile of *Carpodacus* is closely similar to the adult female and thus distinctly streaked (the juvenile of *Kozlowia* is apparently not known). The adult female of *L. sillemi* is as yet unknown, but the fact that the juvenile of this species is far more heavily streaked than the adult male, unlike other *Leucosticte*, may indicate that the female is streaked too, and thus not similar to the adult male. If this assumption is valid, then *L. sillemi* perhaps is better included in *Kozlowia*, showing the same adaptations to high-mountain life, with very long wing and short tail and leg. The plumage of juvenile *L. sillemi* is closely similar to female *Kozlowia* and some of the larger *Carpodacus* such as *C. rubicilloides*, but differs in extensive white fringes to the tail-feathers, and the juvenile may also differ in measurements when full-grown. As the position of *Kozlowia* is not definitely established and the female of *L. sillemi* is not known, *sillemi* is here kept in *Leucosticte*.

Acknowledgements

I extend my sincere thanks to the curators of the ornithological departments of the natural history museums of Berlin, Bonn, Dresden, Leiden and Tring for permitting me to examine specimens in the collections, and to the curators of the collections of Leiden and Philadelphia for sending specimens on loan. Mrs Caroline Sillem provided pages of her father's diary, and Prof. Dr K. H. Voous and Dr J. Wattel made useful comments on earlier versions of the manuscript.

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A new subspecies of *Aramides cajanea* from Brazil

by Douglas F. Stotz

Received 16 December 1991

The nominate subspecies of the Grey-necked Wood-Rail *Aramides cajanea* is found from southern Costa Rica to northern Argentina. Among specimens from within this vast area, there is variation in such features as tone and extent of brown on nape, intensity of rufous underparts, and tone of the olive back. Based on these characters, several taxa have been named. This variation, however, appears to be poorly correlated with geography, and the various named taxa do not appear to be valid (Hellmayr 1929, Hellmayr & Conover 1942, Ripley 1977).

I have recently completed an analysis of a series of 124 specimens in the Museu de Zoologia da Universidade de São Paulo (MZUSP) from throughout Brazil. This series shows considerable variation in the intensity of the rufous underparts and in the tone of the olive back, which do not have a reliable geographic component. A series from the mangroves of the southern São Paulo coast, however, are consistently distinct from other specimens of *Aramides cajanea*. I propose to call this population:

Aramides cajanea avicenniae subsp. nov.

Holotype. ♂, MZUSP 67212, Iguape, São Paulo, Brazil; collected 13 July 1969 by A. M. Olalla.

Diagnosis. Resembles *A. c. cajanea*, but the back Plumbeous (colour 78 [capitalized colour names and numbers from Smithe 1975]), and occiput with brown wash much reduced and greyer or absent. These characters are unique among the populations of *Aramides cajanea*.

Description of type. Crown grey, near Glaucous (colour 79). Nape and back Plumbeous, lower back with slight olive tone. Rump, upper tail coverts and tail black. Scapulars and innermost secondaries Olive-Green (colour 47) with a slight bluish tone, becoming Citrine (colour 51) on inner scapulars and on broad edges to wing coverts and secondaries; these otherwise, along with the primaries, dark Tawny (colour 38), tipped with Vandyke Brown (colour 221). Lores, auriculars, sides of face and throat Light Neutral Gray (colour 85) becoming Medium Neutral Gray (colour 84) on lower throat and uppermost breast. Chin white. Breast, upper abdomen, and upper flanks Cinnamon (colour 39), a little darker on upper breast just below grey. Remainder of underparts black. Tibial feathering Glaucous. Flattened wing 186 mm, tail 69.8 mm, culmen (from anterior edge of nostril) 28.5 mm, tarsus 68.7 mm.

Distribution. Known from mangroves of the São Paulo coast from Icapara south to Ilha do Cardoso. Probably extends south in mangroves to central Santa Catarina (see Discussion).

Etymology. For *Avicennia*, one of the two dominant genera (along with *Rhizophora*) in the mangrove forests of the southern Brazilian coast, which this bird inhabits.

Specimens examined (spelling and names of Brazilian localities follow Paynter & Traylor 1991; coordinates given for localities not included in that work):

Aramides c. cajanea. **PANAMA**.: Veragua 1♂. **BRAZIL**. **Alagoas**: Mangabeiras 2♂, 1♀; **Amazonas**: Eirúnepe 1♂, 2♀, Ilha Baruruá, boca do Ati-Paraná (2°30′S, 67°23′ W) 1♂; Igarapé Anibá 1♀; Itacoatiara 1♀; Lago Baptista 4♂, 5♀; Lago de Canaçari 5♂; Lago Tapaiúna 1♂; Parintins 2♂; Rio Eirú, Santa Cruz 1♂; Silves 5♀; **Bahia**: Curupeba 1♂; Ilheus 4♂; Rio Gongogi 1♀; **Ceará**: Itapipoca 1♀; **Espírito Santo**: Ibiraçu 2♂; Rio Doce 1♀; Rio São José 1♀; Vila Velha 1♀; **Goias**: no locality 1♂;

Maranhão: Boa Vista 1♂; **Mato Grosso**: Cuiabá 1♂; Fazenda Aricá-Mirim 1♀; **Mato Grosso do Sul**: Corumbá 1♂, 1♀; Coxim 1♂; Miranda 1♂; Salobra 2♂, 3♀; **Minas Gerais**: Marinqui 1♂, 1♀; Pirapora 2♂ 1?; **Pará**: Belem 1♂, 1♀; Caxiricatuba 5♂, 4♀, 1?; Fordlândia 3♂, 1?; Igarapé Buiuçu 1♂; Jaquara (2°12′ S, 54°24′ W) 1♂; Piquiatuba 3♂, 1♀; Patauá 1♂, 1♀; Rio Xingu, above Altamira 1♂; Taperinha 1♂; **Paraiba**: Coremas 2♂; **Paraná**: Rio Paracal 1♂; **Roraima**: Baixo Rio Mucajaí 1♂; **São Paulo**: Barra do Rio Dourado 1♂, 1♀; Barretos 1♂; Itapura 1♂, 2♀; Itaverava 1♀; Porto Marcondes 1♂, 2♀.

Aramides c. cajanea x *avicenniae*. **BRAZIL**. **São Paulo**: Ilha dos Alcatrazes 1♂, 1♀; Ilha dos Buzios 3♂, 3♀; Ilha Vitoria 1♀; Ubatuba 1♀.

Aramides c. avicenniae. **BRAZIL**. **São Paulo**: Barra de Icapara 1♂, Cananéia 4♂, 1♀; Icapara 1♂, 1?; Iguape 1♂, 1♀; Ilha do Cardoso 1♀.

Discussion

A. c. avicenniae seems to be almost completely restricted to mangroves, where it is found alongside the smaller *Aramides mangle*. It occasionally occurs along streams through restinga (forest of low stature on white sands) on Ilha do Cardoso, São Paulo (pers. obs., P. Martuscelli pers. comm.), but seems absent from humid forest along the base of the Serra do Mar. Elsewhere in its range, *Aramides cajanea* regularly occurs in the undergrowth of humid forest well away from water, as well as along watercourses and in mangroves.

Specimens of *Aramides cajanea* from the northern São Paulo coast, and its offshore islands, are intermediate between *avicenniae* and nominate *cajanea* in the colour of the mantle and occiput. They are darker rufous below than *avicenniae*, resembling typical *cajanea* (see below). They presumably represent intergrades between *avicenniae* and *cajanea*. The species occurs in mangroves in this region (pers. obs.), but is not restricted to them. Specimens collected on Ilha dos Buzios, which lacks mangroves, were obtained in humid forest (H. Camargo pers. comm.).

The intermediate specimens resemble in back colour many of the specimens from the interior of southern Brazil, which have been placed in a separate subspecies, *chiricote*, by some authorities. Hellmayr (1929) dismissed *chiricote* as too variable for recognition. Examination of specimens from Mato Grosso do Sul and the interiors of São Paulo and Paraná leaves me in agreement with Hellmayr, although about half of the specimens are greyer than typical *cajanea*.

In addition to the differences mentioned in the diagnosis, *avicenniae* is consistently paler rufous on the underparts than is typical of nominate *cajanea*. However, of the 102 specimens of *cajanea* in MZUSP, thirteen, from eleven different localities throughout its Brazilian range, are as pale below as *avicenniae*. The palest of these, from Coremas, Paraiba, is paler than any *avicenniae*. These pale variants lead me not to use this character in the diagnosis of *avicenniae*.

Both Hellmayr (1929) and Bangs (1907) discount the value of occiput colour in South American birds in distinguishing subspecies. All specimens of *avicenniae*, however, show at most a slight brown tone to an essentially grey occiput, whereas all the *cajanea* that I have examined show a clear brown occiput that contrasts obviously with the grey of the neck. Ripley (1977) describes the occiput of *A.c. cajanea* as blackish or brownish, so occasional variants that are not brown may exist, but I have not seen any.

Bangs (1907) discussed the features of two specimens, one from "St. Catharine's" (probably Santa Catarina), Brazil, in the U.S. National Museum and one from Rio de Boraxudo (now Rio de Borrachudo, Paraná) in the British Museum. A grey back and pale rufous underparts are mentioned for both specimens (Sharpe 1894, Bangs 1907), agreeing with *avicenniae*, but the colour of the occiput is not mentioned. Rio de Borrachudo is in the extensive mangrove forests of the northern Paraná coast that are contiguous with the mangrove regions of southern São Paulo. Mangroves occur south along the Santa Catarina coast (Alonso 1977), so it seems reasonable to believe that the St. Catharine's specimen came from the Santa Catarina coast. Together these specimens suggest that *avicenniae* extends south to the southern limit of mangroves in Santa Catarina.

The northern limit of *avicenniae* is also uncertain due to the lack of specimens between the mouth of the Rio Ribeira near Iguape and Ubatuba. However, the extensive mangroves that line the inland waterways, bays and river mouths from the mouth of the Rio Ribeira south unbroken for 150 km to Paranagua, in Paraná, disappear north of the Rio Ribeira. As far north as Peruibe, 60 km up the coast from the Rio Ribeira, significant patches of mangroves (with *A. cajanea* present; pers. obs.) exist where river mouths or sheltered bays provide the necessary conditions. North of Peruibe, though, 70 km of unbroken sand beach separate the mangroves of the southern São Paulo coast from the extensive mangroves around Santos. This seems likely to have been the barrier that isolated *avicenniae*, allowing its evolution, and now providing the northern limit to its distribution.

Acknowledgements

I wish to thank Tom Schulenberg for reviewing the manuscript, and Paulo Martuscelli and Helio Camargo for discussion of *Aramides* ecology. I received financial support from the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP).

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New and noteworthy bird records from Belize

by Steve N. G. Howell, Barbara A. Dowell, Douglas A. James, Robert A. Behrstock & Chandler S. Robbins

Received 23 December 1991

As with many areas of Central America, much remains to be learned about the birds of the small, newly independent country of Belize (formerly British Honduras). Russell (1964) summarized what was then known and a few authors have since added observations, most recently Wood *et al.* (1986) and Wood & Leberman (1987). The former work, however, listed, without reference or supportive documentation, at least 33 species previously unreported from Belize. The following observations represent significant new information concerning 48 species and one hybrid, including 11 species previously unreported from the country and 14 others uncritically listed by Wood *et al.* (1986). That 31 of the species discussed here were not recorded by Russell (1964) indicates the recent increase in observations in much of Belize.

This paper is based on a total of ten weeks Howell spent in Belize during June 1988, February 1990, February to April 1991, and January to February 1992, accompanied during some of the last two trips by Berhstock; on banding and censusing work in Belize in 1983 and from 1987 to 1991 by Dowell and Robbins; and on seven 1–2 week field trips between 1985 and 1991, plus a year's residence in Belize from September 1988 to September 1989, by James. During 24–29 August 1989, James participated in the "Doyle's Delight" expedition to an unexplored area of the southern Maya Mountains at the border of Cayo and Toledo districts. Camp was made at 1060 m elevation in the Snake Creek headlands, the 1142 m summit of which is at approximately 16°30′N, 89°03′W. This is 22 m higher than Victoria Peak in the Cockscomb Mountains, previously considered the highest point in Belize.

Records of particular authors are indicated by their initials, and are supplemented by records kindly contributed by other observers (indicated by their initials) listed under Acknowledgements. NB indicates species previously unreported from Belize; NBW indicates species new to Belize for which specific details could not be traced to support their inclusion by Wood *et al.* (1986); NR indicates additional species not reported by Russell (1964).

MANX SHEARWATER *Puffinus puffinus*

A recently washed-up corpse was found along the beach about one half mile north of Dangriga, Stann Creek District, on 9 Feb 1990 (CSR); the remains (head and wing) have been deposited at the U.S. National Museum of Natural History. NB.

FULVOUS WHISTLING-DUCK *Dendrocygna bicolor*

RGW observed a group of 20 birds in loose association with 500 Black-bellied Whistling-Ducks (*D. autumnalis*) at Crooked Tree Wildlife Sanctuary, Belize District, on 23 Apr 1990. This nomadic species is a rare visitor to the Yucatan Peninsula (Ornat *et al.* 1989, SNGH, pers. obs.), and that it should occur in Belize from time to time is not surprising. NB.

SNOW GOOSE *Chen caerulescens*

A white morph bird at Tres Leguas, Orange Walk District, 29 Jan to 12 Feb 1991 (CSR) is the second record for Belize. The first, noted without reference by Wood *et al.* (1986), is a specimen collected in Nov 1975 and deposited at the American Museum of Natural History. NR.

MASKED DUCK *Oxyura dominicensis*

MEG and BGP saw an alternate-plumaged male on a small pond between Cristo Rey and San Antonio, Cayo District, on 18 Mar 1990, the first record for the southern half of Belize. Wood *et al.* (1986) considered this species a rare resident in northern Belize. NR.

DOUBLE-TOOTHED KITE *Harpagus bidentatus*

On Ambergris Cay, RAB and SNGH saw two separate adult Double-toothed Kites on 12 Feb 1992; the birds were studied and photographed down to ranges of 5 m. This record is remarkable in that Double-toothed Kites typically are residents of humid forest (mostly rain forest), not of scrubby woodland and mangroves. Wood *et al.* (1986) considered the species a rare resident only of the southern hardwood forests, but it is fairly common in hardwood forests throughout Belize (SNGH).

SHARP-SHINNED HAWK *Accipiter striatus*

SNGH saw an immature 5 km south of San Ignacio, Cayo District, on 6 Feb 1990, and another at Guacamallo Bridge, Cayo District, on 6 Feb 1991. Singles were mist-netted at Parrot's Wood, Belize District, on 11 Feb 1983, near Pomona, Stann Creek District, 25 Jan 1990, and near Gallon Jug, Orange Walk District, 23 Jan 1991 (BAD, CSR). These records indicate that the species is a widespread but uncommon winter visitor in Belize. Wood *et al.* (1986) indicated "five or fewer records" in the northern hardwood forests and coastal savannas of Belize. NR.

COOPER'S HAWK *Accipiter cooperi*

One mist-netted near Pomona on 12 Jan 1990 (BAD, CSR), an immature 6.5 km south of San Ignacio on 7 Feb 1990 (SNGH) and an adult at Maya Center, Stann Creek District, on 4 Feb 1991 (SNGH) represent the first records of this species in the southern half of Belize. Reported by Wood *et al.* (1986) only from the northern hardwood forests ("five or fewer records"). NR.

BROAD-WINGED HAWK *Buteo platypterus*

An immature near San Antonio, Cayo District, on 6 Feb 1990 (SNGH), an adult at Hidden Valley Falls, Cayo District, on 20 Mar 1991 (SNGH), and an adult 3 km north of Steadfast Village, Stann Creek District, on 4 Feb 1992 (RAB, SNGH) support the status of this species as a winter resident in southern Belize. An immature carefully studied, heard, and photographed at Ambergris Cay, 11–13 Feb 1992 (RAB, SNGH), presumably represents a vagrant. There are two previous Belize records (Russell 1964, Wood & Leberman 1987).

ZONE-TAILED HAWK *Buteo albonotatus*

Single adults were seen along the Hummingbird Highway at the Hershey Cacao plantation, 18 Jan 1988, and one mile south of Belmopan, 8 Mar 1988 (K. S. Anderson, pers. comm.). As in the Yucatan Peninsula (Ornat *et al.* 1989) this species has likely been overlooked as a winter visitor to Belize. NB.

ORANGE-BREASTED FALCON *Falco deiroleucus*

A pair at Hidden Valley Falls on 20 and 27 March 1991 (RAB, SNGH) was seen copulating on the former date, and on both dates the female was observed flying to a presumed nest cavity in spectacular cliffs near the waterfall. The pair was also present in February 1992 (RAB, SNGH). This pair was first noted at Hidden Valley in 1989 (EB) and represents one of the few Belize records of this rare species (Haney 1983, Wood & Leberman 1987). NR.

SINGING QUAIL *Dactylortyx thoracicus*

SNGH heard the distinctive, far-carrying "song" of this species (at least 3–4 individuals) along the Macal River, 6.5 km south of San Ignacio on 31 Jan and 5–7 Feb 1990, and 5–7 Feb and 26–28 Mar 1991, representing the first records of Singing Quail for southern Belize. "Five or fewer records" noted by Wood *et al.* (1986) for the northern hardwood forests. NR.

GREY-BREASTED CRAKE *Laterallus exilis*

One was mist-netted near Blue Creek Village, Toledo District, on 11 Jan 1989 (BAD). Single Grey-breasted Crakes were hand-caught by JB during the mowing of a damp meadow at Monkey Bay Wildlife Sanctuary, Belize District, in Apr 1989 (photographed) and Nov 1990. Also in Nov 1990, several very small crake chicks were observed at Monkey Bay, either of this species or of Ruddy Crake (*L. ruber*). These represent the second to fourth documented occurrences from Belize, the first being in Mar 1964 (Russell 1966), a record overlooked by Wood *et al.* (1986). NR.

BLACK RAIL *Laterallus jamaicensis*

A Black Rail called its *kii kii durr* song persistently between 19.00 and 21.00 h at Monkey Bay Wildlife Sanctuary, 27–29 Jan 1992 (SNGH, IK). The bird was tape-recorded at ranges down to 2 m but could not be seen in the dense, dry savanna grass it called from. There are two previous Belize records, most recently in 1963 (Russell 1964, 1966).

UNIFORM CRAKE *Amaurolimnas concolor*

On 20 Mar 1991, DAJ and ten other observers watched a Uniform Crake foraging for an hour along the bank of a stream in the Cockscomb Basin Jaguar Preserve, Stann Creek District. Russell (1964) listed only two previous Belize records, the most recent in 1935.

AMERICAN OYSTERCATCHER *Haematopus palliatus*

One at Dangriga on 4–9 Feb 1990 (BAD, SNGH, CSR) is apparently only the second Belize record (Wood *et al.* 1986). NR.

LONG-BILLED CURLEW *Numenius americanus*

RAB and SNGH studied a Long-billed Curlew, at times in direct comparison with 3 Whimbrels (*N. phaeopus*) at Commerce Bight, 2 km south of Dangriga, Stann Creek District, on 4 Feb 1992. There is one previous published Belize record (Wood & Leberman 1987); no data support the species' status as a rare transient, as indicated by Wood *et al.* (1986). NR.

DUNLIN *Calidris alpina*

MEG and BGP observed three Dunlin at Commerce Bight on 21 Mar 1990. Wood *et al.* (1986) noted "five or fewer" records from the northern half of Belize but no data appear to support this statement. NBW.

POMARINE JAEGER *Stercorarius pomarinus*

MEG and BGP observed and photographed an adult and immature off the beach at Commerce Bight on 22 Mar 1990. SNGH has found Pomarine to be commoner than Parasitic Jaeger (*S. parasiticus*) off the Yucatan Peninsula in winter so its occurrence in Belize is not surprising. NB.

PARASITIC JAEGER *Stercorarius parasiticus*

One first-winter bird observed for an hour flying around the Belize City waterfront, Belize District, 23 Mar 1991 (RAB, SNGH), apparently represents the second record for Belize (cf. Wood *et al.* 1986). NR.

GREAT BLACK-BACKED GULL *Larus marinus*

DAJ and WC observed and photographed a first-winter bird, in the company of Herring Gulls (*L. argentatus*) and Laughing (*L. atricilla*) Gulls, at Belize City on 11–12 Jan 1989. The source of the record noted by Wood *et al.* (1986) cannot be traced (D. S. Wood & D. Weyer, pers. comm.) and this thus represents the first documented occurrence of Great Black-backed Gull in Middle America. This species has been increasing in eastern North America and has occurred regularly along the United States Gulf of Mexico coast dating from the 1970s (Duncan 1981). NBW.

WHITE-CROWNED PIGEON *Columba leucocephala*

RAB and SNGH saw one at Commerce Bight, 24 Mar 1991, and RAB saw one there, 4 Feb 1992, the second and third mainland Belize records of this Caribbean species (cf. Russell 1964). In adjacent Quintana Roo, Mexico, White-crowned Pigeons are regular and seasonally common visitors to the mainland from nesting islands offshore, and the same may be true in Belize.

PHEASANT CUCKOO *Dromococcyx phasianellus*

Singles heard at Xunantunich, Cayo District, on 31 Jan 1990 (SNGH), and 6.5 km south of San Ignacio, 6 Feb 1992 (RAB, SNGH) appear to represent only the third and fourth Belize records of this secretive species (cf. Wood *et al.* 1986). NR.

SMOOTH-BILLED ANI *Crotophaga ani*

On Ambergris Cay, Corozal District, one on 13 Feb 1990 (SNGH, photographed by D. Hoffman) and at least two on 13 Feb 1991 (SNGH) were all in the company of groups of the noticeably smaller Groove-billed Ani (*C. sulcirostris*); a lone bird was seen there on 12 Feb 1992 (RAB, SNGH). Russell (1964) listed one specimen, apparently now lost, from Belize, and Pelzl (1969) reported sightings from Northern Cay.

STYGIAN OWL *Asio stygius*

One roosted in pine savanna near the Belize Zoo, Belize District, during Jun 1989 (AB, DAJ, DW). SNGH observed and tape-recorded a courting pair at Hidden Valley Falls the night of 19 Mar 1991. There are few previous Belize records of this little-known species, and only one other for the Mountain Pine Ridge, an area for which Wood *et al.* (1986) overlooked Russell's (1964) specimen record.

STRIPED OWL *Asio clamator*

One studied by a tour group at Dangriga, 9 Mar 1988 (K. S. Anderson, pers. comm.), appears to be the first confirmed record for Belize, since the source for this species' inclusion by Wood *et al.* (1986) cannot be traced (D. S. Wood, pers. comm.). NBW.

YUCATAN POORWILL *Nyctiphrynus yucatanicus*

SNGH heard up to three Yucatan Poorwills, giving their distinctive *will* call, 6.5 km south of San Ignacio on 5–8 Feb 1990 (also one seen), 6–8 Feb 1991, and 27–29 Mar 1991. These represent the southernmost records of this Yucatan endemic. Russell (1964) reported only one specimen and a few sightings from northern Belize. The reports of Wood *et al.* (1986) from the coastal savannas, however, are based on birds misidentified by voice (D. Weyer, pers. comm.); see Pierson (1986) and Howell (1990) for clarification of the vocalisations attributed to this species and *Caprimulgus badius*, the Yucatan Nightjar.

SWIFT SP. *Cypseloides sp.*

At least 14 swifts seen and heard high overhead at Hidden Valley Falls, 19 Mar 1991 (SNGH), could not be identified to species but were clearly referable to the genus *Cypseloides*. Overall they resembled the Black Swift *C. niger*, a species not known from Belize. Their calls, however, did not sound like those of Black Swift nor of the smaller Chestnut-collared Swift *C. rutilus*. They may have been White-chinned Swifts *C. cryptus*, a little-known species that has been found once in Belize (Russell 1964).

BAND-TAILED BARBTHROAT *Threnetes ruckeri*

One mist-netted at the Cockscomb Basin Jaguar Preserve, on 19 Feb 1990 (BAD, CSR), is the northernmost record for this striking hummingbird, being some 75 km north of previous records in southernmost Belize (Barlow *et al.* 1972, Wood & Leberman 1987). NR.

STRIPE-TAILED HUMMINGBIRD *Eupherusa eximia*

Stripe-tailed Hummingbirds were fairly common at the Doyle's Delight expedition camp, 20–24 Aug 1989, including a female being followed by a newly-fledged begging juvenile (WC, DAJ, SM, MM). This species was known in Belize only from the Cockscomb Mountains (Russell 1964).

SPECTACLED FOLIAGE-GLEANER *Anabacerthia variegaticeps*

This species appeared to be fairly common at the Doyle's Delight expedition camp: DAJ and MM saw two on 20 Aug 1989, and several others were seen after that date (SM, MM). NB.

BARE-CROWNED ANTBIRD *Gymnocichla nudiceps*

A male and female were mist-netted at Blue Creek, Toledo District, on 21 Jan 1989 (BAD, CSR). The only previous records from Belize are those of Wood & Leberman (1987). NR.

CARIBBEAN ELAENIA *Elaenia martinica*

One on Ambergris Cay, 13 Feb 1990 (SNGH), at least one there on 6–7 Feb 1991 (MEG, BGP), three on 13–14 Feb 1991 (SNGH), two on 3–4 Apr 1991 (RAB, SNGH), and one on 12 Feb 1992 (RAB, SNGH) suggest the species has been overlooked on some of the inner Belize cays. Caribbean Elaenias have also been reported recently from mainland Quintana Roo (Ornat *et al.* 1989) where they may be present only in winter. The Ambergris birds may also be wintering migrants from the Caribbean although Bond (1985) did not indicate that the species shows any migratory tendencies. On Ambergris, *E. martinica* is sympatric with the commoner Yellow-bellied Elaenia *E. flavogaster* but favours scrubby woodland while *flavogaster* prefers more open areas. In Belize, Caribbean Elaenias have been reported only from offshore keys, namely Glover's Reef and Lighthouse Reef (Russell 1964, Pelzl 1969).

GREY KINGBIRD *Tyrannus dominicensis*

BW and DS observed and photographed a Grey Kingbird in Belize City, Belize District, on 3 Apr 1989. DAJ and party found and photographed one in Belize City on 17 Mar 1991; the bird was still present on 23 Mar (RAB, SNGH). NB.

WHITE-WINGED BECARD *Pachyramphus polychopterus*

An immature male was mist-netted and photographed near Gallon Jug on 24 Jan 1991 (BAD, CSR). The only previous records for Belize, all from the southern half of the country, are those of Wood & Leberman (1987). NR.

CAROLINA (WHITE-BROWED) WREN *Thryothorus ludovicianus*

On 28 Mar 1991, RAB and SNGH heard and saw a White-browed Wren singing 6.5 km south of San Ignacio. The bird was in dense deciduous woodland at 120 m elevation near the west bank of the Macal River. This species was listed as a permanent resident with "five or fewer records" from both northern and southern hardwood forests by Wood *et al.* (1986), and reported from Belize by the A.O.U. (1983). Phillips (1986), however, found no Belize records, and the source of the A.O.U. and Belize Checklist citations is unclear (B. L. Monroe, Jr., pers. comm., and D. S. Wood, pers. comm., respectively). NBW.

SLATE-COLOURED SOLITAIRE *Myadestes unicolor*

This species was common at and above the Doyle's Delight expedition camp, 20–24 Aug 1989 (WC, DAJ, SM, MM). In addition, SNGH tape-recorded a singing individual, presumably an altitudinal migrant (elevation about 150 m), at Milepost 39 on the Hummingbird Highway, Cayo District, 2 Feb 1990. Previous records from Belize were all from the Cockscomb Mountains (Russell 1964).

BREWSTER'S WARBLER *Vermivora pinus* × *V. chrysoptera*

PR observed an individual of this distinctive hybrid at Windy Hill, between San Ignacio and Benque Viejo, Cayo District, on 19 Mar 1988. The only other record from northern Central America is a recent observation from Guatemala (Howell & Webb 1992). NB.

VIRGINIA'S WARBLER *Vermivora virginiae*

DAJ and three others watched a Virginia's Warbler foraging for 30 minutes at Baker's Ranch (about 20 km northwest of Belize City), Belize District, on 18 Dec 1988. On 16 Mar 1989, JGE and a tour group carefully studied a Virginia's Warbler in coastal scrub at Dangriga. These records together with one reported in February 1977 near Lake Peten Itza in northern Guatemala (Beavers *et al.* 1991) suggest a pattern of vagrancy for this species which normally winters in southwest Mexico. NB.

SHINING HONEYCREEPER *Catherpes lucidus*

DAJ and MM saw a male near the Doyle's Delight expedition camp on 22 Aug 1989. This is another species previously known in Belize only from the Cockscomb Mountains (Russell 1964).

BLUE-HOODED EUPHONIA *Euphonia elegantissima*

DAJ and party saw three Blue-hooded Euphonias near the Doyle's Delight expedition camp on 21 Aug 1991. There is one previous record for Belize (Russell 1964).

COMMON BUSH-TANAGER *Chlorospingus ophthalmicus*

Common Bush-Tanagers were common at and above the Doyle's Delight expedition camp, 20–23 Aug 1989 (WC, DAJ, SM, MM). The only previous record from Belize is from the Cockscomb Mountains (Russell 1964).

SLATE-COLOURED SEEDEATER *Sporophila schistacea*

A male was mist-netted and photographed at Blue Creek, Toledo District, on 28 Jan 1989 (BAD, CSR). In addition, JGE and a tour group observed and photographed a male (and also probably saw two females) in association with bamboo at Chan Chich, Orange Walk District, 12 Mar 1991, and DS observed a male, an immature male, and three females, also at Chan Chich, on 1 May 1991. This nomadic species appears to be expanding its range in Central America; it has invaded the Caribbean Slope of Costa Rica since about 1975 (Stiles & Skutch 1989) and was first recorded in Honduras in 1979 (Marcus 1983). NB.

BLUE SEEDEATER *Amaurospiza concolor*

At Monkey Bay Wildlife Sanctuary, one male on 1 Feb 1991 (SNGH), at least seven individuals on 3 Feb 1991 (SNGH, singing males tape-recorded), a pair on 21 and 24 Mar 1991 (RAB, SNGH; photographed on the last date) and 3–4 birds, including a pair and another singing male, on 2 Feb 1991 (RAB, SNGH). All birds were associated with seeding bamboo. In addition, a male was mist-netted at Bermuda Landing, Belize District, on 24 Feb 1991 (CSR). These records are remarkable not only in that there appear to be no records from neighbouring Guatemala (A.O.U. 1983), but that elsewhere in its range from Mexico to South America the species occurs in highlands and foothills (A.O.U. 1983, Monroe 1968, Ridgely & Gwynne 1989, Ridgely & Tudor 1989, Stiles & Skutch 1989, Thurber *et al.* 1987). NB.

YELLOW-FACED GRASSQUIT *Tiaris olivacea*

In 1990, MEG and BGP noted a male 6.5 km south of San Ignacio, 17 Mar, and at least two pairs between Cristo Rey and San Antonio, 18 Mar. In 1991, RAB and SNGH saw single males at Milepost 39 on the Hummingbird Highway, Cayo District, on 26 Mar, and near San Antonio, 27 Mar. In 1992, RAB and SNGH saw two males 6.5 km south of San Ignacio on 6 Feb. The source of the only previous Belize record (Wood *et al.* 1986) cannot be traced (D. S. Wood, pers. comm., W. F. Young, pers. comm.). Yellow-faced Grassquits occur locally in Guatemala and in the Yucatan Peninsula; increased deforestation may be helping the species spread into southern Belize or it may simply have been overlooked there in the past. NBW.

LINCOLN'S SPARROW *Melospiza lincolnii*

ST observed a Lincoln's Sparrow at Ambergris Cay on 13 Feb 1990. There are only two other records from Belize, both in March (Russell 1964).

WHITE-CROWNED SPARROW *Zonotrichia leucophrys*

On 28 Oct 1988, at Ambergris Cay, DAJ found an immature White-crowned Sparrow foraging with a mixed-species flock that included Grey Catbirds *Dumetella carolinensis* and Indigo Buntings *Passerina cyanea*. White-crowned Sparrows occur as rare, overshooting autumn migrants in Mexico's Yucatan Peninsula, mostly from mid-Oct to Nov (Howell 1989, SNGH, pers. obs.). NB.

ORANGE ORIOLE *Icterus auratus*

At Ambergris Cay, SNGH saw an adult male (photographed by D. Hoffman) and female on 12 Feb 1990, an immature male and immature female on 13 Feb 1991, and RAB and SNGH saw an adult male and female on 12 Feb 1992. Previously the species has been considered endemic to Mexico's Yucatan Peninsula (A.O.U. 1983) although it has been collected at Chetumal (Paynter 1955), immediately adjacent to Belize. That none was found on Ambergris during 2–4 Apr 1991, despite careful searching, suggests the species may be only a winter visitor there. NB.

YELLOW-BACKED ORIOLE *Icterus chrysater*

This species was fairly common in scrubby woodland and coconut palms (*Cocos nucifera*) on Ambergris Cay in Jan and Feb 1990, Apr 1991, and Feb 1992 (RAB, SNGH). There are no previous reports from the Belize cays and all other Belize records are from pinelands (Russell 1964).

HOUSE SPARROW *Passer domesticus*

DAJ noted a roosting group of 15 at Punta Gorda, Toledo District, on 20 Dec 1988, SNGH saw a male and two females at Dangriga on 1 Feb 1990, and CSR saw at least one at Punta Gorda on 3 Feb 1990. Wood *et al.* (1986) noted "five or fewer records" from "cities" in the coastal areas.

Although House Sparrows have pushed south as far as central Panama (Ridgely & Gwynne 1989), why they have not colonised the Yucatan Peninsula (and Belize) is unknown. NR.

Acknowledgements

We thank the following persons who contributed their observations and helped clarify existing published information: Kathleen S. Anderson, Amy Bodwell (AB), Ed Boles (EB), Joshua Brown (JB), Walter Craig (WC), Jules G. Evens (JGE), Mary E. Gustafson (MEG), Inga Kellogg (IK), Sharon Matola (SM), Martin Meadows (MM), Burt L. Monroe, Jr., Bruce G. Peterjohn (BGP), Pamela Rasmussen (PR), David Stejskal (DS), Stuart Tingley (ST), Bret Whitney (BW), Richard G. Wilson (RGW), Dora Weyer (DW), D. Scott Wood, and W. Ford Young. Howell and Behrstock benefited from the company in the field of Dick and Jean Hoffman. Howell also thanks Will Russell and WINGS Inc., and Joshua Brown, Inga Kellogg, and Matthew Miller of the Monkey Bay Wildlife Sanctuary, for logistical support during his field work in Belize. Dowell and Robbins gratefully acknowledge their many volunteer banding assistants and many hosts in Belize. The Doyle's Delight expedition was organized by Sharon Matola of the Belize Zoo and by Martin Meadows, and was made possible by support from the Royal Geographical Society and through logistical support from the British Forces in Belize. This is contribution number 532 of the Point Reyes Bird Observatory.

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Departure behaviour of night migrants in the eastern Sahara

by J. S. Ash

Received 9 January 1992

During an investigation in 1986 into the migration of Palearctic birds at Wadi Halfa (21°53′N, 31°19′E) in the northern Sudan, undertaken by an ICBP supported expedition in cooperation with the Wildlife Conservation Forces of the Sudan, I spent some time observing the departure of migrants on nocturnal flights. The chosen site was on the eastern shore of Lake Nasser on the River Nile's route through the Sahara, where areas of tamarisk *Tamarix* sp. scrub 1.5–2.0 m high are mostly not dense enough to be inaccessible on foot. As the waters of the lake rose in September this scrub became increasingly flooded.

Every day there were large numbers of migrants in the scrub. Most, if not all of them, arrived during the previous night from *c.* 24.00 h onwards, with a peak fall-out at *c.* 40 minutes before sunrise. They apparently spent the daylight hours in the scrub, and from the amount of activity seen, most, if not all of them, spent their time feeding or looking for food. A sample of over 6000 of the Palearctic migrants netted were ringed. Of these, 93% comprised three species, Reed Warblers *Acrocephalus scirpaceus* 59%, Lesser Whitethroats *Sylvia curruca* 24% and Sedge Warblers *A. schoenobaenus* 10%. All the migrants caught were in good condition and carried sufficient fat to enable them to complete the desert crossing (Nikolaus in prep.).

Around sunset (at 17.56 h on 15 September) there was either marked reduction in activity among the migrants, or else they became less visible, and at first it was thought that this was perhaps due to their departure on migratory flight. Further investigation, however, revealed that the birds were still present but in a relatively inactive or quiescent state. At 34–57 minutes after sunset they departed individually in rapid ascent into the sky. During this one hour period after sunset no birds were caught in nets erected in the scrub, indicating that apparently no birds were moving about in near-horizontal flight.

When some of the above migrants were followed in the evenings a type of behaviour more or less common to them all was observed, which I had neither seen previously nor had seen referred to anywhere. As this behaviour is presumably linked with departure on migratory flights the following brief accounts of each incident are related to the time of sunset. Sunset was at *c.* 18.00 h local time, and all incidents detailed below are described as occurring so many minutes after sunset. With sunset at 18.02 h, an incident at 18.12 h is referred to as at +10. At this latitude there were only 30–40 minutes between sunset and darkness, so that birds low down in vegetation soon disappeared from view. By adjusting my position it was sometimes possible to place a bird in silhouette against the paler post-sunset area of the sky, or against this light reflected from water.

(1) 15 September. A Reed Warbler watched from about sunset departed at +39 by flying straight up into the air without any indication of direction.

(2) 16 September. After losing sight of several birds, two Reed Warblers and a Lesser Whitethroat were found at +19, still feeding actively in low tamarisks standing in water. They soon settled down and commenced to preen, which they continued to do until +29. They then all moved down to within 30 cm of the water, where the Reed Warbler stretched both wings, but otherwise did not move, while the other two birds were lost in the increasing darkness. At +43 the Reed Warbler suddenly darted off at an angle of 45° and was almost immediately lost in the dusk. While under observation it was noticeable that this bird, like the others, was very much aware of any passing birds, mostly Swallows *Hirundo rustica* and Egyptian Geese *Alopochen aegyptiaca*. At the time there was a $\frac{3}{4}$ moon, light NW breeze and $\frac{9}{10}$ cloud.

(3) 17 September. The first bird, a Spotted Flycatcher *Muscicapa striata*, was still feeding when lost to view in very poor light at +22. At the same time an immobile Sedge Warbler was found which remained in that state until +32, when it flew off to another bush and was lost. While scanning this bush and others nearby five motionless birds, almost certainly Reed Warblers, were found sitting together in a small tamarisk. Three of these flew off at +42, +52 and +57, all towards the north, and one of them, seen well against an area of pale sky in the west, was visible for some distance rising at 30°. At +42 another observer, Thomas Kiel, who was moonwatching several hundred metres away saw a small bird rise rather erratically into the air across the face of the moon.

(4) 18 September. After a search in which no suitable birds could be found four motionless Reed Warblers were seen together in the same low tamarisk bush. They left singly at +34, +35, +37 and +39 flying off in an erratic manner to the NW (2), SW and W, at an angle of 45° over the lake. During this observation *c.* 40 Swallows settled in a nearby bush, and at least two of them flew off at +36 and +38.

A week later at a desert site at a distance of *c.* 30 km from the lake and river a further incident occurred which may not be related to those described above, although it did concern a Palearctic migrant.

(5) 24 September. At about an hour before sunset a Rüppell's Warbler *Sylvia rueppelli* was found feeding actively in a very small group of sparse low bushes in the desert at 30 km WSW of Teita on the Nile at 18°47′N, 30°07′E. No other birds were present. On returning at sunset to search for a migrant preparing to depart I found what was presumably the same Rüppell's Warbler in a most curious posture. It was perched completely stationary at 30 cm above ground level on an exposed twig with its bill held almost vertically overhead, in which state it remained until +15. Returning at +60 with Gerhard Nikolaus we found the bird in exactly the same site and posture when it was easily hand-caught with the aid of a flashlight. Five minutes later it was placed in a small acacia bush, but 1.2 h later there was no sign of it. At dawn we made a thorough search, so detailed that there was no possibility of missing the bird either dead or alive. As it could not be found it had presumably left in the night.

Discussion

It is not known to what extent the birds watched in the evening had been feeding during the day. Presumably some food was available for them, and water for drinking or bathing was plentiful. At a time shortly after sunset a non-migrating bird would be settling down to rest and adopting its normal sleeping posture. The birds observed here were not doing this: after it was too dark to feed they presumably conserved energy by resting, although they occasionally stretched and preened. In general their behaviour gave the impression that they were preparing for activity rather than rest. It was quite clear from slight head movements that they were aware of passing birds, and any other avian activity in their immediate vicinity. Obviously it is important that departing migrants need to be aware of the presence of potential predators, for some species, such as Sooty Falcons *Falco concolor*, will concentrate on capturing departing migrants as they take off at late dusk (pers. obs. in Egypt). There must be high survival value in delaying departure until the cover of darkness conceals them from predators, and the departure of migrants in rapid darting flight at Wadi Halfa could help in avoiding attacking predators. However, another reason for delaying departure could be the need to await the appearance in darkness of visible navigation aids such as the moon and stars.

In general trans-Saharan migrants under good conditions are carrying enough fuel for a desert crossing. If adverse conditions arise at any stage the birds are faced with a situation where they either have to conserve energy for onward flight, or use up some of their reserves in a search for an extra source of energy. At one extreme, migrants in total desert without sustenance will remain almost motionless in the shadow of a stone or plant all day, whereas at the other extreme, such as at Wadi Halfa, birds may be able to maintain their fuel resources by feeding during the day, may be able to restore any recent losses, and perhaps even boost their arrival weights.

It is suggested here that the migrants at Wadi Halfa arrive in good condition in a vegetated area, perhaps detected by scent, where they remain in a stress-free situation to feed during the day, and then depart on a following evening. An analysis of the weights of these birds now being undertaken (Nikolaus, in prep.) could provide clues about their energy requirements and fuel consumption, in relation to the journey already taken and for that which lies ahead. Evening departure times at 34–57 minutes after sunset at Wadi Halfa conform with times found by several other observers in north Africa and the eastern Mediterranean summarized in Biebach *et al.* (1991) as 30–90 minutes after sunset. However, birds departing after +60 would not be visible at Wadi Halfa. Other aspects of our 1986 observations in relation to those in Biebach *et al.* (*loc. cit.*) are being discussed elsewhere.

Acknowledgements

This study was undertaken incidentally to the main objectives of the ICBP Wadi Halfa Expedition in 1986. I extend thanks to: Gerhard Nikolaus, the International Council for Bird Preservation (ICBP), the Wildlife Conservation Forces of the Sudan and Deutscher Bund für Vogelschutz (DBU).

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Northern White-tailed Bush Lark *Mirafra albicauda*, Singing Bush Lark *M. cantillans* and Friedmann's Bush Lark *M. pulpa* in Ethiopia

by J. S. Ash

Received 9 January 1992

There has been some confusion over the occurrence and distribution of certain *Mirafra* larks in Ethiopia, notably the Northern White-tailed Bush Lark *M. albicauda*, the Singing Bush Lark *M. (javanica) cantillans* and Friedmann's Bush Lark *M. pulpa*. The following remarks attempt to clarify the situation.

Records of Mirafra albicauda

Benson (1946) collected four larks in southern Ethiopia which he presented to the British Museum (Natural History) identified as *Mirafra albicauda*. These birds were apparently never referred to in the literature as *M. albicauda*, except by Benson himself (*loc. cit.*); at a later date Benson reidentified these birds as *M. cantillans marginata*, and the names on their labels were corrected. Prior to Benson's records above of *albicauda* the Childs Frick Expedition to Ethiopia collected four specimens (Friedmann 1937) in March 1912 (Appendix) in an area of black cotton soil at the southeast end of Lake Abaya (see notes below Appendix) and the northeast corner of Lake Chamo in the southern Rift Valley. This area is known as the Nechisar Plain and is now contained within the Nechisar National Park. White (1961) listed the species for Ethiopia on the basis of Friedmann's birds from the Nechisar area, but did not refer to Benson's reidentified "*albicauda*". Furthermore he included *cantillans* with *javanica* and presumably included Benson's birds there when he described the distribution of *M. javanica marginata* as being in "Eritrea (except west), Ethiopia, south-east Sudan, dry areas of Uganda, Kenya and northern Tanganyika". He also includes the subspecies *chadensis* of West Africa, which Urban & Brown (1971) state extends into western Ethiopia. Other than the recent rediscovery at 1100 m of *albicauda* from Friedmann's locality (Safford in prep.) there are no other records from Ethiopia, and it is possible that the species is confined to the black cotton soils there—an area very poorly known ornithologically (Duckworth & Telfer 1991). Initially only photographs of the new bird were available, which I identified as *albicauda*. This identification was confirmed by Dr P. C. Lack and Dr D. J. Pearson, both of whom know *pulpa* well and were able to eliminate it as a possible alternative; and independently R. G. Safford had also come to the same conclusion. Later the specimen was presented to the British Museum.

In order to confirm the identification of the earlier birds Dr Storrs L. Olson checked the two specimens of *albicauda* identified by Friedmann and still held at the Smithsonian Institution, the other two now being at the American Museum (AMNH) and the Philadelphia Academy. He had only three other specimens of *albicauda*, also identified by Friedmann, with which to compare them, but was able to say that they were certainly not the same as *pulpa*, and were likewise different from the Smithsonian's holding of *M. (j.) cantillans marginata*. He assumed that because *albicauda* is regarded as being somewhat like *cantillans* in overall size and bill shape, Friedmann's specimens were probably correctly identified. Olson kindly arranged the loan of one of the Friedmann specimens (USNM 246208), and I was able together with Dr D. J. Pearson to check it, along with the recent specimen from Ethiopia (Safford in prep.), at the British Museum (Natural History). Together we, and Safford on another occasion, confirmed the identification of both specimens as *M. albicauda*, which thus represent the first and second records from Ethiopia (*vide* Appendix), and the species can now be added to the Ethiopian check-list on the basis of being "twice recorded on black cotton soil at the same site in the southern Rift Valley".

Record of Mirafra pulpa

M. pulpa is known from Ethiopia from one specimen (the type) collected by Friedmann (see Appendix) at the Sagan River only *c.* 93 km south of the Nechisar Plain. Following Hall & Moreau (1970) this species is included in the Ethiopian Checklist (Urban & Brown 1970), whereas previously it had been included with *M. cantillans marginata* by Mackworth-Praed & Grant (1960). Subsequently, Lack (1977) provided a history of its taxonomy and showed clearly that it is distinct from *cantillans* on account of its characteristic song.

Distribution of Mirafra cantillans

The Ethiopian Checklist (Urban & Brown 1970) recognizes two races of *Mirafra cantillans, M. c. marginata* which they confine to northeastern Ethiopia, including eastern Eritrea, and *M. c. chadensis* in western Ethiopia. White (1961) gives the distribution of *marginata* as Eritrea (except west), Ethiopia etc., and *chadensis* as across Africa eastwards to western Ethiopia. Widespread records from further south (Ash pers. obs., Benson 1946, Berlioz 1922, Friedmann 1937, Hall & Moreau 1970, Mackworth-Praed & Grant 1960, etc.) show that its distribution extends down the Rift Valley into southern Ethiopia and beyond. This distribution of *marginata* in Ethiopia is an extension of the range of this race eastwards from southern Sudan (Nikolaus 1987) and north from Kenya (Lewis & Pomeroy 1989); *chadensis* extends eastwards in a band across central Sudan almost to Eritrea (Nikolaus 1987), from where there is probably one record only. As apparently the most easterly *chadensis* very closely approaches in distribution the most northerly *marginata*, birds in northern Ethiopia should perhaps be examined more closely. Hall & Moreau (1970) provide the most accurate description of the distribution of the species in Ethiopia.

Acknowledgements

I thank the following for their help: Dr D. J. Pearson for discussion as we examined specimens together at the British Museum, and also him and Dr P. C. Lack for their identification of the photographs of the new Ethiopian *M. albicauda*; Dr Storrs L. Olson for his comments and for the loan of a specimen from the Smithsonian Institution, and Peter Colston for much help at the British Museum (Natural History); Michael Evans, Roger Safford and Will Duckworth who sent me full details and photographs of the Nechisar bird, and Mrs B. P. Hall who provided helpful suggestions.

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APPENDIX

Records, all of which are specimens, of *Mirafra albicauda* and *M. pulpa* in Ethiopia.

Mirafra albicauda				
21 Mar 1912	1♂	Lake Abaya, SE	*c.* 6°05′N, 37°55′E	Friedmann 1937
22 Mar 1912	2♂♂	Lake Abaya, S	*c.* 6°01′N, 37°50′E	Friedmann 1937
24 Mar 1912	1♂	Black Lake Abaya	*c.* 5°59′N, 37°46′E	Friedmann 1937
20 Sep 1990	1o	Nechisar Plain	6°00′N, 37°47′E	Safford in press
Mirafra pulpa				
19 May 1912	1♂	Sagon (=Sagan) River	5°10′N, 37°37′E	Friedmann 1937

Notes:

(a) The first 4 localities are within a few kilometres of each other and are best regarded as being the same and within the bounds of the Nechisar Plain. There is confusion over localities in Friedmann (1937): in his detailed list of collecting localities he states he was at North or "Black" Lake Abaya on 17–22 March 1912 and at South or "White" L. Abaya on 24–26 March (p. 8). I assume that the Black Lake mentioned on 24 March in the details of specimens collected (p. 17 in Part 2) is an error for White Lake, for the expedition was moving south then. Thus: Black Lake Abaya = L. Margherita = present day L. Abaya, 6°20′N, 37°55′E; White Lake Abaya = L. Ruspoli = present day L. Chamo, 5°50′N, 37°40′E; Nechisar Plain is centred on 6°00′N, 37°47′E.

(b) Berlioz (1922) records a ♂ specimen of *M. cheniana chadensis* = *M. cantillans chadensis* in May 1902 at 820 m on the Plaine Netch-sar ("rive gauche de l'Omo"). This could be the same as Safford's locality, although this is at 1100 m, because the collector was in the L. Abaya area in May and did not arrive at the Omo until later. However, there may be an error of locality or date, and there are others in the paper, so that in addition to the need to confirm the identification of this specimen there is another element of doubt involved.

Parapatric species of birds

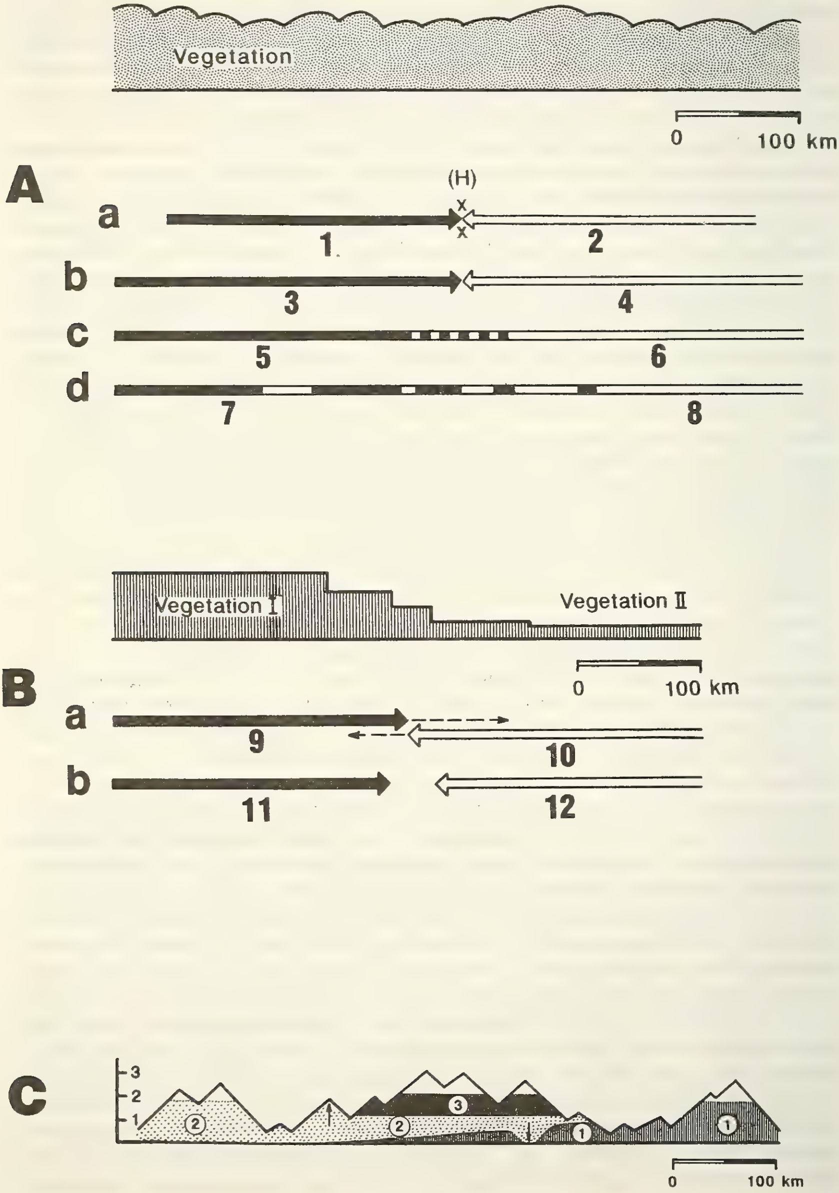
by Jürgen Haffer

Received 16 January 1992

Parapatric species of birds occupy contiguous or narrowly overlapping ranges. They exclude each other geographically with no or only restricted hybridization along their contact zones, their abrupt replacement in many cases traceable over hundreds of kilometers. When hybridization occurs at the contact zone, the representatives are considered as species if each parental phenotype comprises at least 5% of the population along the contact zone (Short 1969, 1972). In these cases, the occurrence of parental phenotypes is indicative of impediments to gene flow. By contrast, a hybrid zone between subspecies consists exclusively or almost exclusively of variously intermediate individuals (hybrids), each parental phenotype comprising less than 5% of the population at the contact zone. Smith (1955, 1965) added 'parapatry' to the group of terms designating the geographical relationships of allied populations of organisms (allopatry, sympatry; see Mayr 1978). Parapatric species are more common than previously suspected, particularly in the tropics. Very few field studies have so far tested the hypothesis that many parapatric distribution patterns are maintained by interspecific competition along the contact zones of the representative species.

Erwin Stresemann (1939: 360) discussed the geographical replacement of taxa which have reached genetic-reproductive isolation (and thus species status) but still retain the same ecological requirements. He stated: "Two (such) forms . . . compete with each other for space and where they met during range extension, they abut sharply against each other without forming hybrids . . . Examples of such situations are probably much more common than currently known" (translated from German). In a pioneering survey, David Lack (1944) investigated ecological aspects of the speciation process and recognized parapatry as one possible outcome of the interactions when differentiating forms come into secondary contact. One species is better adapted than the other in part of their combined ranges, the other in the rest, he said. Mayr (1951) and Vaurie (1955) stressed the theoretical importance of parapatric species listing, respectively, 18 and 23 "pseudo-conspecific" pairs from the Old World avifaunas. Keast (1961) and Vuilleumier (1981) discussed, from an ecological perspective, speciation phenomena in Australian and South American birds, respectively. General reviews of the ecological relationships of species including the occasional geographical exclusion of closely allied forms have been published by Mayr (1963, 1969), MacArthur (1972), Selander (1969, 1971), Brown & Gibson (1983), and Connor & Bowers (1987). Haffer (1989) reviewed the parapatric bird species of the Palaearctic Region.

Parapatry in animals involves the following three situations (Key 1981): First, *hybridization parapatry* between semispecies (*s. str.*) which form a "zone of overlap and hybridization" (Short 1969, 1972). In this case (Fig. 1, Aa) the two forms are genetically isolated despite the occurrence of (largely infertile) hybrids. Little backcrossing occurs. This situation grades into normal hybrid zones between subspecies. Among birds, no cases are known where, comparable to the morabine grasshoppers (Key 1981), post-mating isolating mechanisms have been fully developed prior to the functioning of pre-mating isolating mechanisms. In the grasshoppers mentioned above, individuals of the representatives hybridize freely at the contact zone but produce either no offspring or completely sterile young. Secondly, *competition parapatry* between paraspecies which exclude each other in an ecologically more or less uniform or gradually changing habitat zone with no or almost no overlap or hybridization about a sharply defined contact zone. The latter is often complex and intricate when studied in detail in the field (Fig. 1, Ab–d). The maintenance of the contact zone is here due to interactions between the species in contact (aggressive interference or resource exploitation). Thirdly, *ecological parapatry* comprises situations where an ecotone separates the ranges of two closely related or more distantly related bird species which inhabit, e.g., savanna on one hand and rain forest on the other hand. Geographical exclusion of these allies is an effect of totally different habitat preferences of the representatives and is not due to interspecific competition (Fig. 1, Bb). On the other hand, two representative species inhabiting adjoining and ecologically different vegetation zones which merge gradually, e.g. regions of dry and moist forest zones, may exclude each other abruptly in the ecologically intermediate transition zone due to interspecific competition (Fig. 1, Ba). In such cases, the environmental


Vegetation
0
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A
(H)
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Vegetation I
Vegetation II
0
100 km
B
a
9
10
b
11
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C
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②
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③
①
①
0
100 km

gradients do not seem to be steep enough to account for the abrupt geographic replacement of members of species pairs. In a similar manner, two more or less closely related allies of montane birds with comparable altitudinal preferences (as known from areas where only one of them occurs) may be segregated altitudinally due to ecological competition in areas where both occur (Fig. 1, C). In other cases, the altitudinal replacement of closely related species is due to their totally different ecological preferences, and interspecific competition is not implicated. We may generally distinguish between altitudinal or 'vertical' parapatry (and allopatry) and lowland or 'horizontal' parapatry (and allopatry). Probable examples for all situations listed above are known, although detailed field studies have been conducted in only a few selected cases. Large non-passerine birds may maintain parapatry even if they belong to very distinct species or genera; e.g. Ring-necked Pheasants exclude Prairie Chickens by monopolizing all the good cover (L.S. Short, pers. comm.). The term parapatry, as here understood, refers to the ecological relationships of vicariant species in contact irrespective of their systematic status as sister species or as less closely related species.

Numerous examples of parapatric species have been recognized in different groups of birds and other animals, particularly in the tropics, during recent decades (Mayr 1969, 1980, Mayr & O'Hara 1986, Hall & Moreau 1970, Snow 1978, Bock & Farrand 1980, Haffer 1974, 1986, 1987, 1989). The distribution patterns of superspecies resemble large-scale mosaics composed of the neatly interlocking ranges of the component semi- and paraspecies. The assumption that these species compete ecologically in some way or ways, and for this reason continue to replace each other geographically (Lack 1944, 1971, Mayr 1963, 1969, Selander 1971), has been tested by field studies in only a few cases. Very often, the basic pattern of geographic replacement probably is a legacy of the process of geographic speciation, whereas the mechanism of maintaining geographical exclusion along the contact zones presumably is a process of interspecific competition.

Figure 1. Ecological relations of parapatric species of birds. Schematic representation. A—Geographical replacement of species in a rather uniform vegetation zone. The range of each ally would be presumably more extensive in the absence of the respective geographical representative. (a) Hybridization parapatry between species 1 and 2; this situation grades into narrow zones of overlap and hybridization (and into broad overlap zones where occasional hybridization occurs). (b) Competition parapatry between species 3 and 4. (c) Overlap zone where species 5 and 6 remain interspecifically territorial. (d) Species 7 and 8 overlap their ranges to some extent occupying mutually exclusive patchy areas of varying size (these areas may or may not differ ecologically to some extent; e.g. higher *versus* lower terrain in a gently rolling landscape where the parapatric species meet). B—Geographical exclusion of species in the transition zone between ecologically different vegetation areas I and II (schematically indicated by a regionally changing environmental parameter). (a) Competition parapatry between species 9 and 10 whose ranges presumably would be somewhat more extensive in the absence of the competitor (dashed arrows). (b) Geographical replacement of species 11 and 12 which have totally different ecological preferences and are not in contact. C—Altitudinal species replacement in a mountainous region due to ecological competition. Species 1 and 2 have similar altitudinal ranges where they occur alone but segregate altitudinally where they come in contact. Species 2 ranges down to the lowlands and up into higher mountain zones where species 1 and 3, respectively, are missing (arrows). Vertical scale in thousand metres.

Terborgh (1971), Diamond (1973, 1975, 1986) and Terborgh & Weske (1975) reported abrupt replacements of related bird species along elevational gradients of tropical mountains which are probably due to ecological competition. Moreover, in the absence of several upper montane species on isolated mountain massifs the respective lower montane representatives expanded their elevational ranges correspondingly upward. Prigogine (1984a,b, 1985) summarized the available evidence for ecological competition between closely allied parapatric bird species in the African tropics emphasizing the dynamic nature of the contact zones, especially in mountainous regions. Short & Horne (1985) added information on interspecific territoriality in the barbets *Stactolaema whytii* and *S. anchietae* in the area of contact. In the north Temperate Zone, Short (1969) reviewed several species pairs which form zones of overlap and hybridization of varying width in North America (e.g. species of *Vermivora, Pheucticus, Passerina*) as well as closely related species which have only recently become broadly sympatric (species of *Sturnella*). Selander & Giller (1959, 1963), Emlen *et al.* (1975), Ferry & Deschaintre (1974), Ferry (1977, 1980), Faivre (1986), Martens (1982), Sorjonen (1986) and Lille & Moritz (1988), conducted field studies along contact zones of narrowly overlapping or completely parapatric species of woodpeckers, buntings, Old World warblers and nightingales, respectively, documenting competitive interactions and interspecific territoriality. Ferry (1977, 1980) identified sexual differences in species recognition as underlying reproductive isolation and interspecific territoriality in the warblers *Hippolais icterina* and *H. polyglotta*. Females of other species also use certain features of male songs and calls in species recognition whereas males do not (Searcy & Brenowitz 1988). Regarding some Old World warblers (e.g. species of *Sylvia, Acrocephalus, Locustella, Phylloscopus*), Cody (1979: 224) stated that close congeners with similar foraging ecologies may meet where their ranges abut or at intermediate points on a habitat gradient and defend territories between species as if but a single species were involved. This occurs particularly in simple or successional habitats.

The dynamic nature of the differentiation between geographically representative species is particularly obvious in those cases where the relations of sister species are different in different portions of the contact zone. Some selected examples are: *Milvus migrans* and *M. lineatus* hybridize at the contact zone in the Ural Mountains but are sympatric at a second area of contact in the western Himalaya (Stresemann 1959); *Buteo buteo* and *B. vulpinus* hybridize in the Mediterranean Region and broadly overlap in northeastern Europe (Glutz *et al.* 1971: 480); *Alectoris graeca* and *A. chukar* form hybrids in some areas of contact but not in others in eastern Bulgaria (Watson 1962, Dragoev 1974); *Larus argentatus* and *L. cachinnans* form hybrids at the Murman coast but do not hybridize at the coast of western France (Glutz & Bauer 1982; Yésou 1991); *Passer i. italiae* and *P. domesticus* hybridize along the contact zone in the Alps, whereas *P. i. hispaniolensis* and *P. domesticus* are broadly sympatric in an extensive overlap zone in the Mediterranean Region (Summers-Smith 1988); *Pipilo erythrophthalmus* and *P. ocai* hybridize in western and eastern Mexico but are sympatric without hybridization in other areas of the same region (Sibley & Sibley 1964).

The study of parapatric bird species along their contact zones has been largely neglected in the past, despite the preliminary analyses mentioned above and the availability of the detailed distribution maps of numerous superspecies of tropical birds published during the last 20 years (e.g. Hall & Moreau 1970, Snow 1978, 1982, Urban *et al.* 1986, Fry *et al.* 1988, Haffer 1974, 1987). Many of these maps graphically illustrate the exclusion patterns of paraspecies. However, it is not the systematist in the museum but, as B.P. Hall (in Hall & Moreau 1970: IX) emphasized, ". . . it is the man in the field . . . who can provide the key to many of the problems of relationship . . . and the maps draw attention to the critical areas in which comparative field study is most needed . . .", i.e. the areas of contact between parapatric species. "Such parapatric contact zones provide ecologists with a golden opportunity to discover the environmental factors that determine the placement of the dividing line at that particular location" (Mayr 1969: 14). Field studies are urgently needed in view of rapid habitat destruction by man in many areas of the world, particularly in the tropics.

Still to be determined for most instances of parapatry are:

(1) What is the situation regarding the local distribution of the representative species? Do the contact zones remain stationary or do they fluctuate regionally or shift gradually in a certain direction?

(2) In which manner is each zone of parapatry maintained? Which mechanisms assure reproductive isolation of the species along their zone of contact? Does reinforcement of pre-mating isolating mechanisms and/or of ecological segregation between the species take place at the contact zones? Do agonistic behavioural responses (interference competition) or resource preemption (exploitation competition) by their respective representatives prevent parapatric species from overlapping their ranges?

(3) Why did parapatry originate in each case? Are the locations of contact zones the results of historical causes or of current ecological conditions? Why do parapatric species not penetrate each other's ranges? In instances of sympatry, these species might be expected to maintain interspecific territories or to occupy mutually exclusive patchy areas of varying extent.

(4) When did the parapatric species originate and when did they establish contact?

These open problems of the ecological and systematic relationships of parapatric species need to be addressed regardless of whether some or all of the latter are considered taxonomically as species or still conspecific under a broad species concept. All cases of parapatry probably involve some level of reproductive interaction and reinforcement of pre-mating isolating mechanisms as well as of ecological segregation. Parapatric species illustrate the final stages of the speciation process which is complete only after sympatry of the two allies in contact has been achieved. However, not all speciating taxa pass necessarily through all stages of the microtaxonomic differentiation process (including the advanced stage of parapatry). Strongly isolated small populations on islands or on different continents may differentiate rather rapidly and directly from low levels of microtaxonomic modification to the status of fully compatible biospecies. On the other hand, many continental species that differentiated through 'splitting' from fairly large isolated populations resulting from fragmentation of an ancestral continental species range, probably differentiated more slowly. Consequently, taxa at various intermediate levels of microtaxonomic differentiation are comparatively common in continental faunas (overlap and hybridization; parapatry). Emphasizing the importance of sexual selection and social competition during speciation in many groups of animals, West-Eberhard (1983) concluded that the maintenance of parapatric species boundaries may be due to competitive exclusion between populations which, in geographic separation, diverged rapidly and comparatively recently with respect to social characters (rather than ecological requirements). This interesting suggestion needs to be investigated in the numerous species pairs of birds with highly divergent life styles where parapatry occurs.

In order to direct the attention of field ornithologists to the relatively frequent occurrence of parapatry in birds and to facilitate the selection of species pairs for detailed study, I have compiled lists of examples of parapatric species from the Holarctic, Afrotropical, Neotropical and Australian avifaunas (Appendix). In most cases, these species are each other's closest relatives or at least are fairly closely related. On the basis of currently available information, they inhabit contiguous ranges excluding each other geographically with no or only restricted hybridization along their zones of contact. The latter are located in ecologically rather uniform habitats or in transition zones where, however, the often gradual ecological change does not explain the abrupt replacement of the representatives, one of which presumably is superior on one side of the contact zone, and the other species on the other side. Several contact zones probably follow more sharply defined ecotones. The lists in the Appendix are not complete. Additional parapatric species pairs certainly exist in regions which I have surveyed incompletely, like South America, and in other regions which I have not surveyed at all, like southeast Asia.

Some of the geographically representative species, upon close study of the contact zones, may be found to hybridize to such an extent that they have to be considered as conspecific. This, however, seems unlikely for most pairs listed since many specimens collected near the contact zones fail to show signs of hybridization. In several other cases, the representatives may turn out to be sympatric in a broad overlap zone where they may inhabit conspicuously different habitats, thus rarely coming in contact. In Amazonia, a number of parapatric representatives inhabit opposite sides of broad rivers which form the range limits at least over some distances. However, these representatives often are in direct parapatric contact in areas where the rivers cease to be barriers, either because they become increasingly narrow in the headwater regions or because one of the representatives has managed to cross the river barrier.

Ecologically similar representative species may develop or complete ecological segregation through competitive interactions in parapatry eventually permitting range overlap and sympatry, as suggested by Lack (1944), Mayr (1963), Bock (1979) and Grant (1986). However, the relatively frequent occurrence of parapatric species indicates that such processes may take many thousands of years or more. The parapatric members of two musophagid species pairs in Africa are believed to have diverged from each other less than 1.4 and about 10 million years ago, respectively (Fry *et al.* 1988: XIII). In cases of three to six (or more) closely related parapatric or allopatric representative species which originated during several successive speciation events, the reasons for the delay in these species attaining ecological compatibility remain obscure.

Hopefully, field ornithologists will study increasingly the phenomenon of parapatry in birds to clarify the main open ecological and systematic problems associated with species which exclude each other geographically along sharply defined contact zones.

Summary

Parapatric species of birds occupy contiguous or narrowly overlapping ranges. They often exclude each other geographically along sharply defined contact zones. In ecologically fairly uniform or gradually changing regions, parapatric species either form a zone of overlap and hybridization (semispecies in *hybridization parapatry*) or they exclude each other without hybridization, probably due to ecological competition (paraspecies in *competition parapatry*). A third parapatric situation involves species inhabiting fairly distinct adjoining habitat zones where the species replace each other geographically along the ecotone (*ecological parapatry*). Only few parapatric contact zones of birds have been studied in sufficient detail to be certain about the cause of geographical replacement. Examples of apparently parapatric species in the Holarctic, Afrotropical, Neotropical and Australian avifaunas are listed in the Appendix to document the frequent occurrence of parapatry in birds and to encourage the study of these species in areas where they come in contact.

Acknowledgements

I am grateful to the following persons who critically read the manuscript of this article and various portions of the species lists making many helpful suggestions for improvement: W. J. Bock (New York), B. P. Hall (Fordingbridge, England), A. Keast (Kingston, Canada), J. Martens (Mainz, Germany), E. Mayr (Cambridge, Massachusetts), and L. L. Short (New York). Of course, remaining deficiencies of this article are my own responsibility.

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APPENDIX

List of parapatric species of birds from the Palaearctic Region, North American Region, Afrotropical Region, Neotropical Region, and Australian Region.

Notes:

O—narrow overlap of ranges; H—limited hybridization at the contact zone; A—altitudinal replacement in regional contact zone.

Palaearctic Region: Examples as discussed by Haffer (1989).

North American Region: Examples are drawn from Mayr & Short (1970) and American Ornithologists' Union (1983) Check-list of North American birds, 6th edition.

Afrotropical Region: Examples are drawn from Hall & Moreau (1970), Snow (1978), Mayr & O'Hara (1986), Urban *et al.* (1986), Fry *et al.* (1988), Fry (1988). Numbers in front of many species names refer to the respective map number (P—passerine birds, Hall & Moreau 1970; NP—non-passerine birds, Snow 1978).

Neotropical Region: Numbers preceding species names refer to the following publications which include distribution maps and discussions: 1—Haffer 1967a, 2—Haffer 1967b, 3—Haffer 1969, 4—Haffer 1970, 5—Haffer 1974, 6—Haffer 1975, 7—Haffer 1977a, 8—Haffer 1977b, 9—Haffer 1985, 10—Haffer 1987, 11—Haffer 1988, 12—Delacour & Amadon 1973, 13—Snow 1982, 14—Novaes 1981, 15—Isler & Isler 1987.

Australian Region: Examples are drawn from Keast 1961, Blakers *et al.* 1984, and Ford 1987, his Fig. 5.

Palaearctic Region

Accipiter brevipes/A. badius/A. soloensis
Buteo rufinus/B. hemilasius (A)
Falco biarmicus/F. cherrug/F jugger (O)
Falco peregrinus/F. pelegrinoides
Alectoris rufa/A graeca/A. chukar (H)
Perdix perdix/P. dauuricae
Coturnix coturnix/C. japonica
Tragopan melanocephalus/T. satyra/T. blythi/T. temminckii
Lophophorus impeyanus/L. sclateri
Lophura leucomelana/L. nycthemera (H,A)
Lophura imperialis/L. edwardsi
Crossoptilon crossoptilon/C. auritum
Syrmaticus reevesi/S. ellioti
Chrysolophus pictus/C. amherstiae
Larus argentatus/L. cachinnans (H)
Streptopelia turtur/S. orientalis (O)
Merops apiaster/M. leschenaulti
Picus viridis/P. squamatus
Picoides leucopterus/P. major/P. syriacus/P. assimilis/P himalayensis (O,H,A)
Ammomanes phoenicurus/A. cincturus
Melanocorypha calandra/M. bimaculata (A)
Melanocorypha leucoptera/M. mongolica
Calandrella cinerea/C. acutirostris
Calandrella rufescens/C. cheleensis
Galerida cristata/G. theklae (A)
Alauda arvensis/A. gulgula
Eremophila alpestris/E. bilopha (A)
Ptyonoprogne fuligula/P. rupestris/P. concolor
Delichon urbica/D. dasypus
Anthus campestris/A. godlewskii
Anthus spinoletta/A. rubescens
Motacilla flavissima/M. flava/M. lutea/M. taivana
Motacilla alba/M. maderaspatensis (A)
Luscinia magarhynchos/L. luscinia (O)
Luscinia pectoralis/L. calliope (A)
Saxicola torquata/S. leucura
Oenanthe hispanica/O. pleschanka (H)
Oenanthe leucura/O. leucopygia
Turdus naumanni/T. ruficollis (H)
Turdus obscurus/T. pallidus
Locustella fluviatilis/L. lanceolata
Locusstella naevia/L. certhiola/L. ochotensis (H)
Acrocephalus arundinaceus/A. stentoreus
Hippolais polyglotta/H. icterina (O)
Hippolais olivetorum/H. languida
Sylvia curruca/S. althaea/S. minula (H,A)
Sylvia melanocephala/S. mystacea

Phylloscopus collybita/P. lorenzii (A)
Phylloscopus trochiloides/P. nitidus
Phylloscopus affinis/P. subaffinis
Ficedula albicollis/F. semitorquata
Garrulax maximus/G. ocellatus (A)
Pomatorhinus erythrogenys/P. erythrocnemis
Paradoxornis paradoxa/P. unicolor
Aegithalos niveogularis/A. iouschistos
Aegithalos concinnus/A. leucogenys
Parus major/P. bokharensis (H)
Parus caeruleus/P. cyanus (H,O)
Parus rubidiventris/P. beavani
Parus xanthogenys/P. spilonotus
Sitta nagaensis/S. castanea
Lanius collurio/L. cristatus
Lanius tephronotus/L. schach (A)
Corvus monedula/C. dauuricus (H)
Corvus corone/C. torquatus
Corvus corax/C. ruficollis (H)
Sturnus unicolor/S. vulgaris (O)
Passer domesticus/P. italiae/P. indicus (H)
Pycnonotus leucotis/P. leucogenys (H)
Carduelis flammea/C. hornemanni (O)
Loxia curvirostra/L. scotica
Bucanetes githagineus/B. mongolicus (A)
Emberiza melanocephala/E. bruniceps (H)
Emberiza cia/E. godlewskii
Emberiza hortulana/E. caesia/E. buchanani (A)

North American Region

Gavia immer/G. adamsii (H)
Gavia arctica/G. pacifica (H)
Plegadis falcinellus/P. chihi (O)
Callipepla californica/C. gambelii (H)
Pluvialis dominica/P. fulva (O)
Larus thayeri/L. glaucoides
Selasphorus rufus/S. sasin
Picoides scalaris/P. nuttalli (H)
Melanerpes carolinus/M. aurifrons/M. uropygialis (H)
Sphyrapicus varius/S. ruber (H)
Contopus virens/C. sordidulus (H)
Parus hudsonicus/P. cinctus/P. rufescens
Parus atricapillus/P. carolinensis
Dendroica occidentalis/D. townsendi
Pheucticus ludovicianus/P. melanocephalus
Passerina cyanea/P. amoena (H,O)
Polioptila californica/P. melanura

Afrotropical Region

NP 79 *Circaetus cinerascens/C. fasciolatus*
NP 85 *Accipiter tachiro/A. toussenellii* (H)
NP 88 *Melierax metabates/M. canorus/M. poliopterus*
NP 93 *Buteo augur/B. rufofuscus*
NP 117 *Falco ardosiacus/F. dickinsoni*
NP 122 *Francolinus ahantensis/F. squamatus*
NP 124 *Francolinus leucoscepus/F. rufopictus/F. afer/F. swainsonii*
NP 125 *Francolinus bicalcaratus/F. clappertoni/F. icterorhynchos/F. hildebrandti/F. natalensis*
NP 128 *Francolinus albogularis/F. schlegelii*
NP 137 *Guttera edouardi/G. plumifera/G. pucherani*
NP 166 *Eupodotis vigorsi/E. rueppellii*
NP 169 *Eupodotis afra/E. afraoides*
NP 170 *Neotis denhami/N. heuglini*
NP 171 *Neotis kori/N. arabs*
NP 180 *Vanellus spinosus/V. armatus*
NP 193 *Cursorius temminckii/C. cursor*
NP 215 *Streptopelia vinacea/S. capicola*
NP 225 *Turtur abyssinicus/T. chalcospilos*
NP 228 *Treron calva/T. waalia*
NP 229 *Poicephalus gulielmi/P. robustus*
NP 230 *Poicephalus meyeri/P. senegalus/P. crassus/P. flavifrons/P. rufiventris/P. cryptoxanthus/P. rueppellii*
NP 232 *Agapornis pullaria/A. personata*
NP 235 *Crinifer piscator/C. zonurus/Criniferoides leucogaster*
NP 236 *Corythaixoides personata/C. concolor*
NP 237 *Tauraco persa/T. schutti/T. livingstonii/T. fischeri*
NP 237 *Tauraco livingstonii/T. corythaix*
NP 239 *Musophaga violacea/M. rossae*
Musophaga johnstoni/M. porphyreolophus
NP 253 *Centropus leucogaster/C. anselli*
Cercococcyx olivinus/C. montanus (A)
Caprimulgus inornatus/C. stellatus
Caprimulgus climacurus/C. clarus/C. fossi
NP 295 *Apus bradfieldi/A. barbatus*
NP 299 *Colius striatus/C. castanotus*
NP 300 *Urocolius macrourus/U. indicus*
NP 311 *Halcyon senegalensis/H. senegaloides*
NP 315 *Merops bulocki/M. bullockoides*
Merops variegatus/M. oreobates (A)
NP 325 *Coracias abyssinica/C. caudata*
Phoeniculus cyanomelas/P. aterrimus
NP 335 *Ceratogymna fistulator/C. bucinator*
NP 337 *Bucorvus abyssinicus/B. leadbeateri*
Tockus fasciatus/T. alboterminalis/T. bradfieldi

NP 344 *Lybius dubius/L. rolleti/L. bidentatus*
NP 346 *Lybius leucocephalus/L. rubrifacies/L. torquatus*
NP 349 *Lybius frontatus/L. leucomelas* (H)
NP 352 *Stactolaema anchietae/S. whytii/S. leucotis*
NP 354 *Gymnobucco peli/G. sladeni*
NP 367 *Indicator conirostris/I. minor* (H)
NP 377 *Campethera punctuligera/C. nubica/C. bennettii*
NP 379 *Campethera maculosa/C. cailliautii*
NP 388 *Dendropicos pyrrhogaster/D. xantholophus/D. namaquus*
NP 390 *Dendropicos goertae/D. griseocephalus*
P 1 *Pitta angolensis/P. reichenowi*
P 5 *Mirafra passerina/M. cheniana*
P 6 *Mirafra rufocinnamomea/M. apiata/M. collaris*
P 7 *Mirafra africana/M. hypermetra* (H)
P 10 *Mirafra poecilosterna/M. gilletti*
P 14 *Alaemon alaudipes/A. hamertoni*
P 18 *Calandrella conirostris/C. sclateri*
P 20 *Calendrella starki/C. fringillaris*
P 24 *Galerida cristata/G. malabarica*
P 25 *Eremopterix nigriceps/E. signata/E. leucopareia*
P 26 *Eremopterix leucotis/E. australis*
P 31 *Hirundo nigrita/H. smithi*
P 32 *Hirundo lucida/H. aethiopica/H. angolensis/H. albigularis*
P 36 *Hirundo abyssinica/H. cucullata*
P 43 *Psalidoprogne obscura/P. pristoptera*
P 46 *Anthus pallidiventris/A. leucophrys* or *A. vaalensis*
P 48 *Anthus lineiventris/A. crenatus*
P 53 *Macronyx croceus/M. fulleborni/M. capensis*
P 54 *Macronyx ameliae/M. aurantigula*
P 61 *Campephaga petiti/C. flava* (H)
P 65 *Pycnonotus barbatus/P. nigricans/P. capensis*
P 76 *Chlorocichla falkensteini/C. flaviventris*
P 84 *Phyllastrephus scandens/P. fischeri/P. fulviventris*
P 95 *Prionops caniceps/P. rufiventris*
P 101 *Tchagra tchagra/T. australis/T. jamesi*
P 106 *Laniarius barbarus/L. erythrogaster*
P 107 *Laniarius turatii/L. aethiopicus/L. bicolor/L. ferrugineus*
P 115 *Lanius gubernator/L. souzae*
P 116 *Lanius excubitorius/L. cabanisi*
P 117 *Lanius excubitor/L. somalicus/L. dorsalis*
P 118 *Corvinella corvina/C. melanoleuca*
P 120 *Oenanthe bottae/O. pileata*
P 126 *Cercomela familiaris/C. scotocerca/C. melanura*
P 129 *Monticola brevipes/M. explorator/M. angolensis*
P 130 *Myrmecocichla aethiops/M. nigra/M. formicivora*
P 138 *Cercotrichas barbata/C. quadrivirgata/C. signata*
P 139 *Cichladusa arquata/C. guttata*
P 150 *Cossypha natalensis/C. dichroa*
P 155 *Neocossyphus finschi/N. fraseri*
P 157 *Turdus pelios/T. tephronotus/T. libonyanus*
P 173 *Turdoides reinwardti/T. tenebrosus/T. sharpei/T. hypoleucus/T. leucopygius/T. melanops/T. bicolor*
P 174 *Turdoides plebejus/T. jardinei/T. gymnogenys*
P 198 *Cisticola ruficeps/C. nana*
P 201 *Cisticola lateralis/C. woosnami/C. bulliens*
P 205 *Prinia subflava/P. somalica/P. flavicans/P. maculosa*
P 209 *Spiloptila clamans/S. rufifrons*
P 226 *Camaroptera brachyura/C. brevicauda* (H)
P 227 *Camaroptera simplex/C. stierlingi/C. fasciolata/C. subcinnamomea*
P 231 *Eremomela icteropygialis/E. salvadorii/E. flavocrissalis*
P 232 *Eremomela pusilla/E. canescens/E. scotops*
P 233 *Eremomela atricollis/E. usticollis*
P 240 *Macrosphenus kempi/M. flavicans*
P 250 *Melaenornis edolioides/M. pammelaina*
P 261 *Batis senegalensis/B. orientalis/B. perkeo/B. molitor/B. soror/B. pririt*
P 268 *Erannornis longicauda/E. albicauda*
P 269 *Trochocercus albiventris/T. albonotatus*
P 273 *Parus griseiventris/P. afer*
P 274 *Parus leucomelas/P. niger*
P 277 *Anthoscopus punctifrons/A. parvulus/A. musculus/A. caroli/A. minutus*
P 280 *Promerops cafer/P. gurneyi*
P 281 *Anthreptes collaris/A. platurus/A. metallicus*
P 288 *Nectarinia osea/N. bouvieri/N. habessinica/N. oustaleti/N. talatala*
P 292 *Nectarinia pulchella/N. chalybea/N. neergardi*
P 300 *Nectarinia olivacea/N. violacea*
P 301 *Nectarinia senegalensis/N. hunteri*
P 303 *Nectarinia verticalis/N. bannermani*
P 306 *Zosterops senegalensis/Z. pallida*

P 319 *Serinus mozambicus/S. dorsostriatus*
P 320 *Serinus leucopygius/S. atrogularis/S. citrinipectus*
P 321 *Serinus donaldsoni/S. sulphuratus/S. flaviventris*
P 330 *Ploceus melanocephalus/P. taeniopterus*
P 332 *Ploceus badius/P. rubiginosus*
P 345 *Malimbus scutatus/M. cassini*
P 346 *Malimbus ibadanensis/M. erythrogaster*
P 351 *Euplectes franciscanus/E. orix/E. nigroventris*
P 353 *Euplectes afer/E. diadematus*
P 361 *Passer griseus/P. gongonensis/P. suahelicus/P. diffusus*
P 365 *Passer luteus/P. eminibey*
P 366 *Petronia dentata/P. pyrgita/P. superciliaris*
P 371 *Bubalornis albirostris/B. niger*
P 377 *Pytilia hypogrammica/P. phoenicoptera/P. afra*
P 378 *Vidua interjecta/V. paradisea*
P 391 *Uraeginthus bengalus/U. angolensis*
P 394 *Estrilda troglodytes/E. astrild*
P 397 *Estrilda erythronotus/E. charmosyna*
P 403 *Ortygospiza atricollis/O. gabonensis*
P 406 *Amadina fasciata/A. erythrocephala*
P 409 *Lamprotornis chloropterus/L. acuticaudus*
P 410 *Lamprotornis caudatus/L. purpuropterus*
P 422 *Cosmopsarus regius/C. unicolor*
P 430 *Oriolus percivali/O. larvatus* (H)
P 436 *Corvus albus/C. edithae*

Neotropical Region

Amazonia

5,10 *Psophia crepitans/P. leucoptera/P. viridis*
3,12 *Ortalis guttata/O. motmot/O. supercilaris*
12 *Crax alector/C. globulosa/C. fasciolata*
9,12 *Mitu tomentosa/M. salvini/M. mitu*
10 *Pyrrhura rhodogaster/P. perlata*
10 *Pyrrhura melanura/P. picta*
10 *Brotogeris cyanoptera/B. chrysopterus*
8,14 *Pionites melanocephalus/P. leucogaster*
4 *Pionopsitta barrabandi/P. vulturina/P. caica*
7 *Neomorphus geoffroyi/M. pucherani*
5 *Galbalcyrhynchus leucotis/G. purusianus*
5 *Galbula albirostris/G. cyanicollis*
5 *Galbula tombacea/G. cyanescens/G. galbula/G. rufoviridis*
11 *Monasa nigrifrons/M. atra*
11 *Monasa morphoeus/M. atra*
10 *Malacoptila fusca/M. semicincta*
5 *Selenidera culik/S. nattereri/S. reinwardtii/S. gouldii*
5 *Pteroglossus flavirostris/P. bitorquatus*
5 *Pteroglossus pluricinctus/P. beauharnaesii/P. aracari*
5 *Celeus grammicus/C. undatus*
Hylexetastes stresemanni/H. perrotii
11 *Campylorhamphus trochilirostris/C. procurvoides* (0)
10 *Thamnophilus cryptoleucus/C. nigrocinereus*
9 *Cercomacra nigrescens/C. tyrannina*
10 *Hypocnemoides maculicauda/H. melanopogon*
10 *Myrmeciza melanoceps/M. goeldii*
10 *Thamnomanes schistogynus/T. caesius*
5,13 *Cotinga maynana/C. cotinga*
4,13 *Xipholena punicea/X. lamellipennis*
4,13 *Phoenicircus nigricollis/P. carnifex*
4 *Pipra erythrocephala/P. chloromeros/P. rubrocapilla*
4 *Pipra coronata/P. nattereri/P. vilasboasi/P. iris*
4 *Pipra filicauda/P. fasciicauda/P. aureola*
Lophotriccus vitiosus/L. eulophotes
4,15 *Euphonia rufiventris/E. cayennensis*
6,15 *Euphonia laniirostris/E. violacea* (O)
8,15 *Lanius fulvus/L. versicolor*
10,15 *Tachyphonus rufiventer/T. cristatus*

Eastern Colombia—southern Venezuela (upper Rio Negro—Rio Orinoco region)

3,12 *Ortalis guttata/O. motmot*
10 *Pyrrhura melanura/P. picta*
10 *Brotogeris cyanoptera/B. chrysopterus*
4 *Pionopsitta barrabandi/P. caica*
5 *Galbula tombacea/G. galbula*
11 *Monasa morphoeus/M. atra*
5 *Selenidera nattereri/S. culik*
5 *Pteroglossus pluricinctus/P. aracari*
10 *Veniliornis affinis/V. cassini*
5 *Celeus grammicus/C. undatus*
Xiphorhynchus ocellatus/X. pardalotus

Myrmotherula hauxwelli/M. guttata
6 *Gymnopithys leucaspis/G. rufigula*
Tyranneutes stolzmanni/T. virescens
6 *Cyanocorax violaceus/C. cayanus*
4,15 *Euphonia rufiventris/E. cayennensis*
6,15 *Euphonia laniirostris/E. violacea*

NW Colombia—E Panama

6 *Aramides wolfi/A. cajanea*
2,6,12 *Crax rubra/C. alberti*
4 *Pionopsitta pulchra/P. haematotis*
6 *Trogon comptus/T. melanurus*
5,6 *Ramphastos brevis/R. vitellinus citreolaemus/R. sulfuratus*
6 *Formicarius nigricapillus/F. analis*
6 *Pittasoma rufopileatum/P. michleri*
1,4,6 *Pipra mentalis/P. erythrocephala*
1,6 *Rhynchocephalus brevirostris/R. olivaceus*

6 *Campylorhynchus albobrunneus/C. zonatus*
6 *Psarocolius cassini/P. guatimozinus*
15 *Tangara lavinia/T. gyrola*
6,15 *Cyanerpes caeruleus/C. lucidus*
6,15 *Heterospingus xanthopygius/H. rubrifrons*

Central America

Phloeoceastes guatemalensis/P. melanoleucus
Dysithamnus puncticeps/D. striaticeps
Synallaxis erythrothorax/S. brachyura
15 *Lanio aurantius/L. leucothorax*
15 *Ramphocelus passerinii/R. flammigerus*
15 *Thraupis abbas/T. palmarum*
15 *Euphonia affinis/E. luteicapilla*

Australia

Turnix varia/T. olivii
Petrophassa albipennis/P. rufipennis
Calyptorhynchus funereus/C. baudinii
Calyptorhynchus magnificus/C. lathami
Cacatua sanguinea/C. pastinator/C. tenuirostris
Cacatua leadbeateri/C. galerita
Glossopsitta porphyrocephala/G. pusilla
Polytelis swainsonii/P. anthopeplus
Barnardius zonarius/B. barnardi
Menura alberti/M. novaehollandiae
Psophodes cristatus/P. occidentalis
Cinclosoma punctatum/C. castanotum/C. alisteri/C. cinnamomeum
Malurus elegans/M. pulcherrimus/M. lamberti
Sericornis cautus/S. pyrrhopygius
Sericornis beccarii/S. magnirostris
Acanthiza pusilla/A. apicalis
Acanthogenys rufogularis/A. chrysoptera
Lichenostomus fuscus/L. flavescens
Melithreptus albogularis/M. lunatus
Ramsayornis modestus/R. fasciatus
Pardalotus punctatus/P. xanthopygius
Poephila acuticauda/P. cincta
Chlamydochera maculata/C. nuchalis
Cracticus torquatus/C. mentalis

Display of the Golden-winged Manakin *Masius chrysopterus*

by D. W. Snow & B. K. Snow

Received 20 October 1991

In July 1988, during a 6-week visit to La Planada, a forest reserve and biological research station in southwestern Colombia near the border with Ecuador, we spent 22 hours studying the courtship display and associated behaviour of the Golden-winged Manakin *Masius chrysopterus*, a species confined to humid subtropical forest of the Andes from western Venezuela to Peru. At the time we thought that nothing was known of its courtship; but on our return we found in our mail a recently published paper by Prum & Johnson (1987) on the Golden-winged Manakin in Ecuador, in which most aspects of the display were described in considerable detail. However, in their 164 hours of observation of territorial males Prum &

Johnson did not record copulation, and without this any account of the elaborate display behaviour of manakins is seriously incomplete. We were fortunate in seeing copulation three times, and in some particulars our observations differ from those recorded by Prum & Johnson. Hence it seems worthwhile to give a brief account of these observations, referring to Prum & Johnson for further details of those aspects where our observations agree substantially or completely with theirs.

The adult male Golden-winged Manakin is strikingly different from any other member of the family. It is mainly black, except for a golden-yellow forehead and crown (the feathers of the forecrown projecting forwards, and those of the hindcrown and nape scale-like, becoming brownish or reddish posteriorly), a concealed pale yellow patch on throat and chest, and bright yellow under-wing coverts and inner webs of the middle flight-feathers, which show conspicuously in flight. Elongated feathers on either side of the crown project backwards to form two small lateral 'horns'. Like other manakins, the female is olive-coloured, paler below.

Prum & Johnson (1987) discuss the phylogeny and relationships of the monotypic genus *Masius* within the Pipridae. They show that it is almost certainly most closely related to *Corapipo*, and one of the most striking points of agreement between these two genera is that the males display on fallen logs on the forest floor, in contrast to all other manakins, which display on perches above the ground.

Spatial distribution of male territories

In the montane forest around La Planada, which is moderately or steeply sloping, we found Golden-winged Manakin males displaying in two areas. In the first area, at *c*. 1900 m, a single male displayed out of earshot of any other. In the other area, at *c*. 1800 m, three males displayed within earshot but not within sight of each other, roughly 100 m apart. The territories (areas within which all observed display took place, and where the birds spent the greater part of their time) measured, in two cases, about 25 × 18 and 25 × 15 m, with the long axis up and down gullies in the mountain side. Another was in a similar situation but was not measured; the fourth one was not studied. Censuses of forest birds at La Planada (C. Samper, pers. comm.) show that Golden-winged Manakins are more or less confined to forest on moderate slopes of 10–30°.

All our observations suggested that each display territory was in the undisputed possession of a single adult male. We never saw pairs of males displaying together, or visits by known males to display areas owned by other males, as Prum & Johnson (1987) did on many occasions.

Display-logs

In each of the three territories at which we made observations, display was centred on a fallen log which was aligned up the slope of the gully or hill side. One was *c*. 85 mm in diameter and on a slope of *c*. 20°, another *c*. 200 mm in diameter and on a slope of *c*. 25°; the third was 93 mm in diameter, its slope was not measured. Each log was well covered with moss, but had on its upper surface a small patch that was smooth and free from moss, this cleared area being in one case 150 mm and in another 45 mm long. Males pick moss from their display-logs between bouts of display, and also pick leaves and pieces of fern fronds growing adjacent to the part of the log where their display takes place. Our observations of this behaviour agree with those of Prum & Johnson.

Prum & Johnson found that each male territory included 2–4 logs, the distance apart of which ranged from 5 to 40 m. We saw each male display at only one log; but, as indicated by his calls, the male which was watched for longest also displayed at two other places (presumably logs) that were out of sight. We have no reason to think that there was any difference in their use of display-logs between our birds and those studied by Prum & Johnson. What seemed significant, from our observations, was the downhill orientation of the logs, on slopes of 20–25°, and that this fits the habitat preference indicated by Cristián Samper's census data. As mentioned in a later section, the orientation of the log-approach display also depended on the slope of the log.

Elements of the courtship display

Prum & Johnson group these into (a) advertisement calling, (b) the log-approach display and display call, and (c) displays on the log. As our observations agree closely in most respects with theirs, in the following sections we avoid as far as possible going over all the same ground in detail, and concentrate on aspects of our observations that either amplify or in some way do not tally with theirs.

Advertisement calling. Males spent much the of the day calling from perches within their territory, often moving round the territory and calling from a variety of perches. The male that was watched for longest was present and calling in his territory for 91, 87 and 84% of the time during 3 one-hour observation periods between 11.30 and 15.30 on 20 July. During a continuous 3-hour observation period (11.00–14.00) on 22 July, he was present and calling for 79% of the time. Silent periods, when he was probably foraging, were nearly all 1–3 minutes in length.

The call is a curious low-pitched, frog-like *nurrt* (sonagram in Prum & Johnson 1987), given singly. Intervals between calls are variable, sometimes (when the calling rate is high) only a few seconds, often much longer. We recorded a maximum calling rate of 8 calls per minute; 4–6 per minute was commoner. This is in good agreement with Prum & Johnson, who recorded a maximum rate of 9.6 per minute. A real difference between their data and ours is that their birds called from perches 2–4 m high, whereas ours regularly called from heights up to 11 m. Possibly this was in some way related to differences in the terrain and vegetation in the two study areas.

The *nurrt* is not loud, and so presumably serves to advertise the male's presence to conspecifics who are in the immediate vicinity rather than as a signal to attract distant birds. The calling bird is not visually conspicuous either, as it has its plumage ruffled, appearing almost wholly black, and does not make any striking movement. We noted that males often turn on their perch between calls. Prum & Johnson described the bird as popping its head up briefly exposing the yellow throat patch at the moment of calling. We described it as stretching slightly forward at the moment of calling, so that the yellow of the throat and upper breast was momentarily visible. Probably the slight head movement is both upward and forward.

Log-approach and display call. From a perch some distance away (10–15 m in most of the cases that we observed, but shorter distances recorded by Prum & Johnson), the male flies obliquely down to the display-log uttering a high-pitched whistle, lands on the log with a short two-note call, and immediately jumps back along the log in the direction from which he approached (for a distance of 30–40 cm according to Prum & Johnson, but see below; not measured by us), at the same time giving a third note which we transcribed as *ker* but which Prum & Johnson show is similar in structure to, but shorter than, the advertising *nurrt*. As it jumps, the bird turns in the air, to land facing its original landing place. The landing-and-jump is so rapid that the effect is of a 3-note call *pk-k-ker*, which in the tangled forested slopes where we watched served as a useful clue to the location of a display log.

Our observations agree in the main with Prum & Johnson's, but they do not mention a feature of this display which was very noticeable at the three logs where we saw it. The flight approach to the log was invariably from down hill, and it seemed a prerequisite of a suitable log that there should be a clear approach through the undergrowth from this direction. As already mentioned, the logs were aligned down the slope. Also Prum & Johnson do not mention that the jump on landing is a jump *back* in the direction of the approach flight, that is, a jump down the slope of the log. Their drawing (Fig. 2a) shows the bird jumping along the log in the same direction as the approach flight.

Often, a male performed a succession of log-approaches one after the other, usually flying from the log out to the side, then moving round to a perch on the down-hill side from which to make the next approach-flight. Though on the down-hill side, these perches were well above the level of the log, once an estimated 19 m above the log.

Log-displays. The displays which we saw performed on the log were what Prum & Johnson called the 'chin-down display' and 'side-to-side bowing'. Both are silent. The chin-down display is a motionless posture—the head lowered, with chin almost touching the log, tail up at an angle near the vertical, and plumage sleeked—held by the male immediately after the landing and jump-back in which the log-approach display culminates; it could perhaps be regarded as the final phase of that display. We saw it only at this point in the display sequence; it was regularly but not always performed, and lasted for only up to 2 seconds. It was evidently a more conspicuous feature of the displays seen by Prum & Johnson, as they saw it maintained for up to 20 seconds and say that it was "most often performed immediately following log approaches", so presumably also at other times.

Side-to-side bowing was the main display that we saw performed on the log. It was performed both in the presence of a female and when the male was alone on the log. Facing down hill, the male bows first to one side, over the edge of the log, then to the other side. On a narrow log he may simply swivel round between bows to alternate sides; on a wide log he takes small steps across the log to get in position for the bow to the other side. The body plumage is fluffed out and the back appears humped; the black 'horns' are erected; the orange hind-crest may stick up clear of the nape but is not very conspicuous; the yellow on the wings is not visible. Thus the main impression, seen from the side, is an emphasis of the black plumage. From the front, the yellow fore-crest must be conspicuous. If a female is present she perches on the down-hill side of the male, close to him (*c*. 7–15 cm) and facing him. In one long sequence of side-to-side bowing, in the presence of a female and preceding mating, a total of 34 bows were made alternately from side to side. In another long sequence by a different male, which also preceded mating, the male began by making 3–4 bows to each side of the log, before going to the other side (taking a few steps across, the log being wide); then the bowing became more rapid and switched to single bows to each side. About 40 rapid alternating bows (*c*. 20 to each side) were performed before the sequence of actions leading to mating, described below.

Prum & Johnson's account of side-to-side bowing differs in some details. In particular, they describe the male as sometimes facing one side of the log and bowing alternately towards either end. We never saw this.

Mating. We saw mating on two occasions. At 13.05 hours on 30 July, a female came to a log on which a male had been actively displaying. She turned around several times, flew to a perch near by, then returned to the log, landing on the small area cleared of moss. The male arrived soon after, silently. He then performed a long bout of side-to-side bowing (described above) very close to the female, who was on his down-hill side facing him. He then flew off, and after *c*. 5 seconds returned from the usual down-hill direction, flew over the female and landed with a *pk-k* on her up-hill side, jumped back over her head to land on her down-hill side with a *ker* (the usual log-approach display), then mounted. After mating, the female remained where she was; the male, having dismounted on the up-hill side, again began side-to-side bowing, with single bows to each side; then flew off and returned in identical fashion and mounted again. After mating, which lasted 2–3 seconds, the female remained for about 10 seconds, then flew off. The male stayed a bit longer, slightly hump-backed (side-to-side bowing posture), then flew off and began calling.

On the other occasion, on 26 July, the sequence was essentially the same, except that in the course of the male's side-to-side bowing, which lasted about 2 minutes, the female made 10 flutters over the male and immediately back again. When on the down-hill side of the male, she crouched low and sometimes moved her head slightly from side to side. After the 10th flutter over the male and back, he flew off, out to the side, and then flew in from the down-hill end in the log-approach display and mated on landing. The female was crouching across the log at the place where it was barest of moss. After mating, the male did more side-to-side bowing, then again flew off and round and back again, but when he landed with the *pk-k-ker* the female had left.

A third sequence, seen on 29 July, involved the adult male who had mated on the 26th and a female-plumaged bird who was probably an immature male. After a long bout of side-to-side bowing (34 bows), during which the female-plumaged bird twice fluttered over the male and back, the male flew off; but when he returned and landed with the *pk-k-ker* the female-plumaged bird had moved slightly up the log. While the male was in the chin-down posture, on the down-hill side, the female-plumaged bird briefly mounted him. Both birds then left. With no knowledge of the sex and status of the female-plumaged bird, this incident cannot be interpreted.

Other displays. Allowing for the fact that rapidly executed movements seen under difficult conditions and sometimes partially hidden by screening vegetation are often not clearly seen and, especially when first seen, are easily misinterpreted, we saw no displays that were definitely different from those described above. We did not see the display which Prum & Johnson call 'stamping'. For completeness we quote their description: "On several occasions males that were perched on display logs stamped their feet very rapidly for <1 sec, moving 2 or 3 cm ahead along the log. Although this display was infrequent and extremely short in duration, it appeared to have the stylized and nonfunctional qualities of a ritualized display behavior and was always performed while perched on the log in between bouts of side-to-side bowing."

Discussion

In the preceding sections we have mentioned a number of mainly minor discrepancies between our two accounts, involving details of display behaviour. At this stage in the study of a little known manakin it seems worthwhile highlighting such discrepancies, as experience shows that although manakin display repertoires are highly stereotyped, a long period of field study is needed before a full and accurate account can be given of the displays of any species. Difficult conditions of observation, and confusion in interpreting incompletely developed displays given in different contexts, combined with the rapidity of many of the movements, are the chief problems encountered.

In addition to these minor discrepancies, a major difference between what we saw and what Prum & Johnson recorded concerns the social organization of the males. As already mentioned, all our males seemed to be in undisputed possession of a territory; we saw no interactions between them. Visitors to the display logs were all in female plumage and, from the evidence of their behaviour, were females (or, in one case, probably an immature male). Prum & Johnson, however, frequently saw pairs of males displaying simultaneously on a log, either two visiting males while the owner was absent or, more often, the resident male and a visiting immature male. On a number of occasions the two males performed perfectly coordinated alternating log-approach displays, and synchronized or coordinated side-to-side bowing displays.

Without further study it is impossible to explain this undoubted and striking difference in the behaviour of males at the two study sites, only about 80 km apart and linked by suitable forest habitat and so unlikely to have populations that are genetically very different. It seems most likely that, since Prum & Johnson did not see mating in spite of watching for much longer than we did, their observations (from 27 June to 28 July) may have been made a little before the main breeding season began (although a female mist-netted on 28 July had a well developed brood patch), while ours were apparently made at the height of breeding. Very likely seasons vary somewhat not only from place to place but from year to year. Hence the frequent interactions between males at the display-logs at Prum & Johnson's study site may have been related to the establishment of dominance at what are probably traditional display-logs. If this was the case, it is of interest that the coordinated displays which develop between males in the pre-breeding period seem to parallel closely the coordinated displays between males in species of manakins in which such displays are a regular feature throughout the breeding season, e.g. members of the *Pipra aureola* species-group (Schwartz & Snow 1978, Robbins 1986).

Based on our observations alone, we would have had no hesitation in including *Masius* among the manakins in which males maintain individual spatially separated display territories in dispersed leks, such as the *Pipra serena* species-group, *Pipra pipra* and *Ilicura militaris*. Prum & Johnson, from their experience, conclude that the mating system of *Masius* is most like that of the *Pipra aureola* species-group. Clearly, further observations are needed.

Acknowledgements

We are very grateful to Christián Samper K., Guillermo Cantillo F., and the staff of the La Planada research station for helping us in all sorts of ways and making our visit, to one of the richest areas of neotropical forest, so enjoyable; and we also thank the Fundación para la Educación Superior, Cali, for authorizing our visit.

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The Tree Sparrow *Passer montanus* in Sardinia

by *J. D. Summers-Smith*

Received 13 March 1992

The first breeding record for the Tree Sparrow in Sardinia was of two pairs nesting in the tower of the fortress of Cagliari in 1898 (Bonomi 1899). Before that it had been known only as a winter visitor, for example an adult male at Decimomannu (17 km north-west of Cagliari) on 20.10.1896 (Giglioli 1907). There have been regular reports of breeding in Cagliari since the first record: breeding 1905 (Giglioli 1907), 1906 (Martorelli 1906), 1921–22 numerous breeder in Cagliari and its surroundings (Moltoni 1923), 1955–57 (Moltoni 1964), 1961–62 (Kunkel 1963), 1979 (Summers-Smith 1979). It had spread to nearby Poetto and Capo S. Elia by 1956 (Moltoni 1964). By 1961–62 it was reported at Mesau southwest along the coast and inland to Siliqua (Walter 1965) and I saw them at Teulada and Porto Teulada in 1989.

In contrast, neither Steinbacher (1952, 1953, 1956) found any in Cagliari in 1952 and 1954, nor Corti (1958) in 1958; furthermore, Bezzel (1957) did not record any in 1956 in the Campidano Valley running northwest from the city. Despite these negative results, the regular reports make it most likely that the species has been present in Cagliari since the end of the last century.

Moltoni (1923) stated specifically that in 1922 Tree Sparrows were present nowhere else on the island. Since then, however, four other centres of colonization have been established.

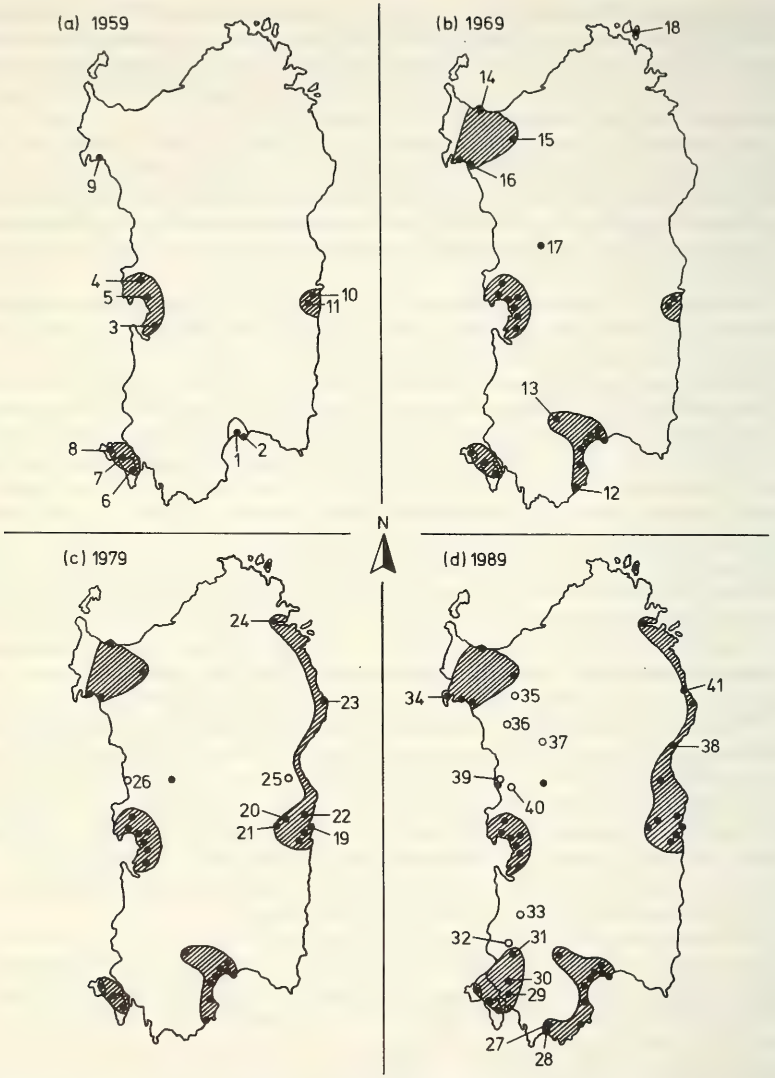
On the west coast it was first recorded from Arborea in the 1940s (Walter & Demartis (1972), followed by Riola Sardo in 1955 and 1956, Oristano in 1956 (Bezzel 1957) and inland at Macomer in 1960 (Westermann 1961). Although Westermann (1961) could report only 1 from S. Giusta on 8.4.60, it appears that by 1961–62 Tree Sparrows were already well established in the fertile reclaimed land near Arborea and the coastal plain surrounding Oristano (Walter 1965).

Tree Sparrows were first reported from Isola di S. Antioco in 1956, though presumably they had been there for some time as at this time they were present not only in S. Antioco and Calasetta, but also in Carloforte on Isola de S. Pietro (Moltoni 1964). In 1989 I found them numerous in the coastal plain from S. Giovanni Suergiu north to Carbonia and Iglesias, but not further to the north in S. Angelo and Arbus.

A third colonization has taken place in the low-lying country between Alghero and Porto Torres in the northwest. The first record was of a single bird from Fertilia in the 1940s (Walter & Demartis 1972). This was followed by a report for Porto Torres in 1961 (Kunkel 1963) and breeding records for Sassari, Alghero and probably Fertilia in 1964 (Moltoni 1964). In 1989 I found it commonly in the valley from Alghero to Porto Torres and as far west as Tramariglio, but not in the higher lying towns of Ittiri, Villanova Monteleone and Pozzomaggiore.

The final area of occupation is on the east coast, where it was first reported from Tortoli in 1957, followed by Lanusei in 1959 (Moltoni 1964). I found it in the former in 1979 and, in addition, also in Arbatax, Villagrande Strisaili, Villanova Strisaili, Girasole and north along the coast to Capo Comiso and Olbia, but not inland in Dorgali, though I found it there in 1989.

I have attempted to reconstruct the history of the colonization in Figure 1, which gives the situation in 1959, 1969, 1979 and 1989 respectively. In this reconstruction I have discounted the isolated records for Macomer in 1960 (Westermann 1961) and Isola Caprera off the northeast coast (Walter 1965) that have not been repeated. Because of the lack of systematic observations some of the spread may have taken place earlier than suggested in the maps. However, the presence of birds in Bosa Marina and Dorgali in 1989, in both of which I failed to find any in 1979, suggests that colonization of the island is still taking place. The former of these may be


(a) 1959
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(b) 1969
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Figure 1. Distribution of Tree Sparrow in Sardinia: ●, occurrences; ○, looked for but not found.

Localities (sequence of numbering follows order of reference in text): 1, Cagliari. 2, Poetto. 3, Arborea. 4, Riola Sardo. 5, Oristano. 6, S. Antioco. 7, Calesetta. 8, Carloforte. 9, Fertilia. 10, Tortoli. 11, Lanusei. 12, Mesau. 13, Siliqua. 14, Porto Torres. 15, Sassari. 16, Alghero. 17, Macomer. 18, Isola Caprera. 19, Arbatax. 20, Villagrande Strisaili. 21, Villanova Strisaili. 22, Girasole. 23, Capo Comiso. 24, Olbia. 25, Dorgali. 26, Bosa Marina. 27, Teulada. 28, Porto Teulada. 29, S. Giovanni Suergiu. 30, Carbonia. 31, Iglesias. 32, S. Angelo. 33, Arbus. 34, Tramariglio. 35, Ittiri. 36, Villanova Monteleone. 37, Pozzemaggiore. 38, Orosei. 39, Bosa. 40, Suni. 41, S. Giovanni.

the start of a new centre of colonization as in 1989 I could find them only in Bosa Marina, not in nearby Bosa or Suni.

As Walter (1965) has already pointed out, the Tree Sparrow favours the water-rich districts of the island, breeding below 200 m, though wandering in the winter and occurring up to 700 m.

Although Moltoni (1923) suggested that the Tree Sparrow was originally introduced to Sardinia, it seems to me equally probable that they could have arrived in Cagliari as involuntary passengers on board ship, possibly from Naples where it is a common bird in the town centre. There could have in fact been several such invasions and the spread from Cagliari could have been delayed until sufficient genetic variation had occurred in the founding population to give it the necessary vigour to initiate the expansion. This parallels the colonizations of Tree Sparrows from introductions to St. Louis, Missouri, U.S.A., in 1870, and Melbourne, Australia, in the 1860s and 1970s, in both of which they were in competition with the introduced House Sparrow *Passer domesticus*, and equally with the House Sparrow in South Africa, where long periods elapsed before there was any significant spread from the locus of introduction (Summers-Smith 1988).

A spread of this sort seems most probable for the colonization of the Arborea-Oristano area, that is connected to Cagliari by the low-lying Campidano valley; but the other areas are separated by high ground and it seems equally possible that these colonizations resulted from migrants from the north, as seems to be the case for Corsica and Malta (Summers-Smith 1988). In this connection, it is perhaps significant that the islands of S. Antioco and S. Pietro were occupied before the adjoining mainland coast.

The presence of Tree Sparrows in Bosa Marina, separated from the other populations by the high-lying hinterland, is consistent with a coastal arrival, particularly as in 1989 they appeared to be confined to the coast. This recalls the situation in S. Antioco, where they were first reported in 1956, but not on the mainland until 1989, with the closest approach from the east being Siliqua in 1961–62 (Walter 1965).

Acknowledgement

The author wishes to thank Mr John Turner for his skill in preparing the distribution maps.

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IN BRIEF

THE NEST AND EGGS OF *ESTRILDA CAERULESCENS*

According to Serle & Morel (1977), the nest and eggs of free-living Lavender Firefinch *Estrilda caerulescens* are undescribed; they have, however, been bred in captivity (Goodwin 1982). In the course of regular ornithological field work at the ORSTOM Station site at M'Bour, Sénégal (14°23′ N, 16°57′ W), this species, which is very common, was found breeding at the end of August, in the middle of the rainy season. A nest with fresh eggs was found on 10 August 1986.

The nest was in an area of small clearings in which herbaceous vegetation predominated, edged with native shrubs (Mimoseae, Capparidaceae). The woody vegetation, which had been seriously affected by the droughts of 1972–73, included numerous dead and fallen trees, favouring the growth of lianas (*Antigonum leptopus, Momordica balsamina, Ipomaea* sp.). The site was also crossed by narrow tracks, favourable to the development of tall bordering weeds on whose seeds the Lavender Firefinch feeds.

The nest, 3 m above ground on a partially dead tree (*Cassia siamea*), was placed between three forked twigs of a terminal whorl. It was abundantly covered with, and well hidden by, the liana *Momordica balsamina*. The nest was domed and had at the top a very long (15 cm) and narrow (1.5 cm diameter) entrance tunnel. The nest chamber was some 12 cm deep and 8 cm wide.The total volume of the nest was estimated at 3 dm^3, which is astonishing for the size of the bird (wing-length 52 mm, weight 8 g). The outer part of the nest was rather roughly made, but the interior was well padded. It was mainly composed of a graminaceous plant (*Bracharia distichophylla*), and still green at the time of its discovery, with some *Momordica* leaves around the nest chamber. No feathers or any other material was found inside the nest.

The eggs, 3 in number, were ovoid, uniformly cream-coloured with a slight pink tinge. When found they were translucent, indicating that they were newly laid. They measured 14.7 × 10.9, 15.0 × 10.1 and 15.9 × 11.4 mm and each weighed *c.* 0.9 g. If the clutch was complete, it was similar to that of related species in Africa, but on the low side for a savanna species (*Lagonosticta senegala* average 3.5; most savanna estrildines average 4.3, forest estrildines 3.7; Morel 1969).

In this relatively open environment, conditions seem ideal for this savanna species, as food resources, both seeds and insects, are abundant during the rainy season. Lavender Firefinches can often be seen foraging with other estrildines (*L. senegala, Estrilda bengala*). We can regard these species as forming a guild, in Blondel's sense of "un groupe d'espèces affines qui fréquentent et se partagent, selon des modalités parfois très subtiles, un type de ressources du milieu".

We should stress that we found nesting Lavender Firefinches extremely shy and secretive, which probably accounts for the fact that their nest has hitherto remained unknown.

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F. BAILLON

22 January 1992

ON THE NAME "FRIENDLY GROUND-DOVE"

The common name of *Gallicolumba stairi* has long been "Friendly Ground-Dove" (most recently Watling 1982, *Birds of Fiji, Tonga and Samoa*; Sibley & Monroe 1990, *Distribution and Taxonomy of Birds of the World*; Clements 1991, *Birds of the World: A Check List*) or its variant "Friendly Quail Dove" (Howard & Moore 1991, *A Complete Checklist of the Birds of the World*). However, some authors have objected to applying the term "Friendly" to this very shy species. Watling (*loc. cit.*) wrote "The Friendly Ground-Dove has a most inappropriate common name, since far from being friendly it is a timid, wary bird, the usual sighting being a brief glimpse of a brown bird flying swiftly away". Clunie (1984, *Birds of the Fiji Bush*) instead used "West Polynesian Ground-Dove". Pratt *et al.* (1987, *A Field Guide to the Birds of Hawaii and the Tropical Pacific*) coined "Shy Ground-Dove", and commented: "Other name: Friendly Ground-Dove. This ridiculous and misleading name is well entrenched in the literature, but virtually every author has felt the need to remark about its inappropriateness. Perhaps the name originated as a bad joke. We suggest the above alternative [Shy Ground-Dove] so that future authors will not have to explain that the name is a lie."

The name "Friendly Ground-Dove" was neither a bad joke nor a lie. When it was coined, it was a simple and honest choice. Many birds of the Pacific islands are named after the archipelagoes they inhabit, especially if no congeners are sympatric. Just in *Gallicolumba*, Pratt *et al.* listed as primary or alternate names: the Caroline Islands, the Polynesian, the Society Islands, the Tuamotu, the Marquesas, and the Palau ground-doves. Completing this list of geographically-named Pacific ground-doves is Friendly Ground-Dove. In years past, the archipelago now universally known as Tonga was called by English-speaking peoples "The Friendly Islands" (Stevenson 1988, *Webster's New Geographical Dictionary*). *Gallicolumba stairi* is the only ground-dove inhabiting "The Friendly Islands", and the type specimen is believed to have come from Tonga (Peters 1937, *Check-list of Birds of the World*, Vol. 3). Clearly, "Friendly Ground-Dove" referred to this species' home islands, not to its unfriendly behaviour. This name only became confusing when people forgot the name "Friendly Islands". If the long name "Friendly *Islands* Ground-Dove" had not been abbreviated for common usage there would have been no confusion.

Because this dove also inhabits Fiji and Samoa, Clunie's name "West Polynesian Ground-Dove" is geographically preferable, but this could be confused with the "Polynesian Ground-Dove" *Gallicolumba erythroptera*. As Pratt *et al.* (1987) is the standard field guide for Tropical Pacific birds, I support their simple and descriptive name "Shy Ground-Dove", because "Friendly Ground-Dove" has become universally misunderstood.

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16 February 1992

RANGE EXTENSIONS OF ORANGE-CHEEKED PARROT AND WHITE-BROWED PURPLETUFT IN AMAZONIAN VENEZUELA

The Orange-cheeked Parrot *Pionopsitta barrabandi* is known to occur in west-central South America east of the Andes from southeastern Columbia and southern Venezuela through eastern Ecuador and eastern Peru to northern Bolivia and eastward to central Amazonian Brazil. In Venezuela it is recorded from the southern part of Amazonas province and the south-central part of Bolívar province. Its hitherto known northern limit in southern Amazonas is the junction of the Río Guaviare and Orinoco (Meyer de Schauensee & Phelps 1978, *Birds of Venezuela*). It is thus widely distributed but is regarded as rare or uncommon to locally common (Forshaw 1973, *Parrots of the World*; Hilty & Brown 1986, *Birds of Colombia*; Meyer de Schauensee & Phelps, *loc. cit*). Its preferred habitat is humid evergreen forest to 500 m.

In the rainy season, on 23 and 25 July 1991, I observed a flock of 5 Orange-cheeked Parrots in an area about 5 km west of the Piaroa Indian village of Gavilán in the northwestern Amazonian territory of Venezuela. They were resting during the hot midday in a high canopy tree close to the forest edge. This observation extends the range of *Pionopsitta barrabandi* 160 km to the north.

The White-browed Purpletuft *Iodopleura isabellae* is distributed in west-central South America east of the Andes. Hitherto, in Venezuela, it has been recorded in southern Amazonas north to the junction of the Río Guaviare and Orinoco (Meyer de Schauensee & Phelps, *loc. cit.*; Snow 1982, *The Cotingas*). Although widely distributed, it is considered uncommon (Hilty & Brown, *loc. cit.*). Its preferred habitat is humid evergreen forest to 500 m.

On 23 July 1991 I observed two individuals of the White-browed Purpletuft in the area mentioned above. They were perching in the top of a vine-entangled tree about 20 m high at the forest edge. From time to time they sallied out to capture insects, and several times disappeared behind vine leaves probably in search of fruits. This observation extends the range of *Iodopleura isabellae* 160 km to the north.

Virtually unbroken rainforest extends from the junction of the rivers Guaviare, Orinoco and Atabapo north to Gavilán. These range extensions are therefore not unexpected; few ornithologists visit Amazonian Venezuela, and especially not during the rainy season. The area has been closed to ordinary tourism until recent years and access is very difficult without aeroplane and boat.

I thank Dr Jon Fjeldså for valuable comments on a draft of this paper.

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BENT OTTO POULSEN

23 January 1992

THE NEST OF THE LARGE-BILLED ANTWREN *HERPSILOCHMUS LONGIROSTRIS*

Very little is known of the biology of the Large-billed Antwren *Herpsilochmus longirostris*, an endemic antbird of eastern and central Brazil, spottily recorded from Piauí, Tocantins and Mato Grosso south to Mato Grosso do Sul, São Paulo and Paraná. Recent observations have shown that it inhabits the middle and lower strata of both humid and semideciduous forests, palm groves (*buritizais*) and gallery forests of central Brazil, and also secondary habitats. Like other members of the genus, *H. longirostris* often joins mixed flocks composed of such species as *Picumnus albosquamatus*, *Veniliornis passerinus*, *Sittasomus griseicapillus*, *Lepidocolaptes angustirostris*, *Taraba major*, *Myiarchus swainsoni*, *Todirostrum cinereum*, *Idioptilon striaticolle*, *Myiopagis caniceps*, *Camptostoma obsoletum*, *Polioptila dumicola*, *Cyclarhis gujanensis*, *Conirostrum speciosum* and *Coereba flaveola*, as we observed at Santa

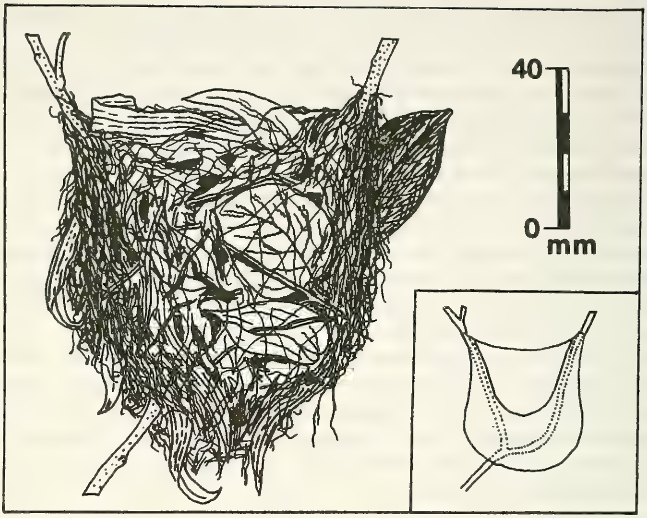

Figure 1. Nest of the Large-billed Antwren *Herpsilochmus longirostris*, lateral view.

Isabel do Morro (*c*. 11°34′S, 50°40′W), Bananal Island, Tocantins, in July 1981. Like other antbirds, the Large-billed Antwren occasionally follows army ants, and also scans the surface of leaves and branches looking for small insects such as Orthoptera and geometrid caterpillars. Its call seemed to us very similar to that of *Herpsilochmus rufimarginatus* and *H. pectoralis*: a rhythmic sequence of descending notes, resembling the typical calls of several antshrikes *Thamnophilus* spp.

Virtually nothing is known of the breeding biology of *Herpsilochmus* as a whole (Sick 1985, *Ornitologia brasileira: uma introdução*), and the Large-billed Antwren is no exception. On 10 October 1989, we discovered its nest in a secondary forest of Ilha Grande, Paraná river, municipality of Altônia, Paraná (*c*. 24°03′S, 54°12′W). The nest, now housed in the Museu Macional, is a small cup of vegetable material, 60 mm in total length, 50 mm in width and 80 mm in height, with an egg chamber 60 mm deep (Fig. 1). Both parents attended the nest, which was placed 1.5 m above the ground, concealed among the branches of a lauraceous tree (*Ocotea suaveolens*), and was composed of several leaves (especially of the bamboo *Guadua spinosissimum*), spadices of an unidentified grass, filaments of the fungus *Marasmius*, kapok and radicels. In general shape it is similar to the nests of several other antbirds such as *Thamnophilus, Dysithamnus*, some species of *Myrmotherula* etc. Judging from the gonads of a small series collected in southern Mato Grosso and western Paraná, *H. longirostris* breeds during the spring (September–December), at the beginning of the rainy season.

We would like to thank the Brazilian Conselho Nacional de Desenvolvimento Cientifico e Tecnológico (CNPq), Conservation International, and the Instituto Florestal do Paraná, which partially supported our researches on Brazilian birds.

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DANTE MARTINS TEIXEIRA

22 April 1992

BOOKS RECEIVED

ICBP 1992. *Putting Biodiversity on the Map: priority areas for global conservation.* Pp. vi+90, 36 figures, photographs. International Council for Bird Preservation, 32 Cambridge Road, Girton, Cambridge CB3 0PJ. ISBN 0 946888 24 8. £12.50. 30 × 21 cm.

This is an important publication, and especially interesting to ornithologists as the priority areas are based primarily on birds, whose distribution is better known than that of any other major animal group. It aims to identify and map all important centres of endemism, based on the known distribution of all bird species with breeding ranges of less than 50,000 km^2. The ranges of these species of limited distribution fall into a number of natural groupings: 221 such groupings (Endemic Bird Areas) have been identified, and they embrace 2484 species, the vast majority (95%) of all species with restricted ranges and a sizeable fraction of the world's birds. Obviously, a large majority of the species with wider ranges also occur in the Endemic Bird Areas, which are thus of prime importance for bird conservation as a whole. (The north temperate regions are the only exception, as the northernmost Endemic Bird Area is the Caucasus; also seabirds do not easily fit into the pattern.) But these centres of bird endemism have an even wider importance, as a review of the literature on other groups shows that there is a high degree of congruence between Endemic Bird Areas and the main areas of endemism of other animals and plants.

This book, soft-covered, on glossy paper, with coloured figures (mainly maps) and photographs, and detailed Appendices, has been produced in a style which should not only satisfy the professional biologist and experienced naturalist but also attract and hold the attention of policy-makers. One must hope that it has the impact that it deserves. To quote from Foreword by E. O. Wilson of Harvard, one of the world's leading biologists: "To staunch this haemorrhaging [of the world's living diversity], to serve ourselves and generations further into the future than it is possible to imagine, we must somehow deflect the hammer blows [of man's unrelenting impact on the environment]. But they must fall somewhere, due to population growth and industrialization. From which points then on earth should we deflect them? A first relatively detailed answer is the brilliant achievement of the ICBP Biodiversity Project."

Jonsson, L. 1992. *Birds of Europe with North Africa and the Middle East.* Pp. 559, numerous colour illustrations and maps. Christopher Helm—A. & C. Black. ISBN 0 7136 8096 2. £25.00. 21 × 14 cm.

Among the almost bewildering succession of European field-guides this one, not only illustrated but also written by an outstanding bird artist, is something new. In the first place its geographical scope is unique for a single-volume field-guide, covering as it does North Africa north of the Sahara and the Middle East—approximately, in fact, the same as that of *Birds of the Western Palearctic*. For vagrants, species recorded in Europe more than five times this century up to 1989 are included (a few not illustrated), and some with fewer records are included for special reasons, e.g. because of possible confusion with commoner species, or because they have attracted special interest. The text is in usual field-guide form, concentrating mainly on identification, with particularly good descriptions of voice, much fuller than in most other field-guides, and brief but useful notes on status and habitat. A 26-page, beautifully illustrated introduction deals briefly with general topics such as plumages and their terminology, behaviour, migration and systematics.

The distribution maps, though small, are excellent and up to date, being based on the latest available data from regional and national atlases, surveys etc. They are in three colours, indicating breeding only, present all year, and wintering only. No attempt has been made to show areas of occurrence on passage. Not surprisingly, the maps are in the main miniature versions of those in *BWP*, with some modifications.

The illustrations are partly based on those in a series of five books in Swedish, *Fåglar i Naturen*, published in 1976–80, with many additions. This has produced a certain lack of uniformity. Some are of more or less standard field-guide type, but with greater variety in the postures in which the birds are shown and with fewer species on the page, in many cases only one or two. Others are of a less formal, more old-fashioned kind, with a carefully painted landscape background, e.g. Chough and Alpine Chough, with three birds perched on rocks against a mountain background and three flying birds above. There are many smaller coloured illustrations at the tops of the text pages, showing birds in flight, points relevant to identification etc. In general, there is an informality and freedom of treatment in the illustrations not found in conventional field-guides, and (despite some that seem less successful than the rest, especially among the passerines) many will find the book a pleasure to possess for its marvellous illustrations quite apart from its other considerable merits.

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BULLETIN

of the

BRITISH ORNITHOLOGISTS' CLUB

EDITED BY

Dr D. W. SNOW

Volume 112
1992

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CORRECTIONS TO TEXT

Page 5, line 38: The Trust Deed specified in Schedule 1 was published in *Bull. Brit. Orn. Club*, 1985 105(1) pp. 3–7.
Page 25, line 2: *Penelopides* not *Penelepides*
Page 25, lines 1–9: *manillae* not *minillae*
Page 25, lines 1–9: *manilloe* not *minilloe*
Page 35, line 37: *Mayrornis* not *Mayornis*
Page 35, line 51: *cyaneovirens* not *cyanovirens*
Page 37, line 39: *Macheiramphus* not *Macheirhamphus*
Page 38, line 10: *cinerascens* not *cinereus*
Page 39, line 25: *F. p. minor* not *P. p. minor*
Page 41, line 11: *solitarius* not *solitaria*
Page 42, line 43: *Oxyura dominica* not *dominicensis*
Page 44, line 17: *exilis* not *exillis*
Page 45, line 14: *melanotos* not *melanotus*
Page 62, lines 40–42: delete sentence 'Furthermore, there is . . . AFRING Data Bank).'
Page 95, line 11: *Porphyrospiza* not *Pophyrospiza*
Page 99, line 3: *camargoi* averages smaller (not larger)
Page 101, lines 20–21: *leucophrus* not *leucophrys*
Page 110, line 5: *newtoni* not *newtonii*
Page 137, line 7: Tuesday 19 May 1992 not Tuesday 17 May 1992
Page 178, lines 43–44: should read: . . . 1928, being simply a mislabelled immature specimen of *T. sylvestris* (Sclater, 1870). The former name should thus fall back into synonymy.
Page 236, line 8: *Oxyura dominica* not *dominicensis*
Page 264, line 34: *Chlamydera* not *Chlamydochera*

Printed in Great Britain by Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

BULLETIN

of the

BRITISH ORNITHOLOGISTS' CLUB

SCIENTIFIC INDEX

to

Volume 112A
1992

COMPILED BY DR J. F. MONK

Corrections to text:
Page 90, line 5 of Table 2. *Agelastes* not *Agelestes.*
Page 96, line 10. *Treron* not *Treton.*
Page 263, line 23. *thalassina* not *thalassima.*
Page 295, line 3 from bottom. *gualaquizae* not *gualaguizae.*

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The generic and specific and subspecific names of all birds mentioned in the text are included.

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Printed in Great Britain by Henry Ling Ltd., at the Dorset Press, Dorchester, Dorset

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